

SUCCESSFUL FARMING'S

Building Guide

FOR FARM AND HOME

25c



NEW IDEAS FOR BUILDING, REMODELING, AND MAINTAINING YOUR FARM BUILDING INVESTMENT TODAY

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SUCCESSFUL FARMING

THE MAGAZINE OF FARM BUSINESS AND FARM HOMES



MEREDITH PUBLISHING COMPANY
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EDITORIAL OFFICE

Dear Friend:

Here's the building book you asked for. I wish I could sit down on a fresh, clean-smelling lumber pile and with a bright, six-penny nail figure with you on your building or remodeling plans. Unfortunately, there are going to be too many lumber piles in the Midwest for me to do that, but I can do the next best thing by sending you Successful Farming's Building Guide for Farm and Home, and entering you in our \$2,000 Building Contest.

The contest idea is our way of congratulating you upon your decision to build now. Besides the pleasure and convenience the improvement will give you, you have the added fun of competing for 68 cash prizes totaling \$2,000. But best of all to most of you, I am sure, will be the knowledge that your contest letters will furnish our editors pictures and information which, when passed along to millions of interested readers, will be an inspiration and help to them, too. The complete rules of the contest are on pages 74-76 of this book.

I am firmly convinced you have chosen the right time to make your improvements. The prospects for the immediate future are good. There has been an upward trend in country lumber sales since 1933. A leading authority on lumber building subjects recently told me: "If you ever expect to build, there are many reasons for believing conditions now offer opportunities that probably will not exist again for many years."

There is an added reason why I think this is the right time to build. Never before have so many manufacturers offered such a variety of materials from which to choose. Never before has there been so much testing and double-testing to make certain that these fit farm needs and will stand farm conditions. You will find in Successful Farming the foremost manufacturers of supplies for building, remodeling, and refurnishing. You can depend upon the quality of their materials because Successful Farming guarantees every advertisement.

You have now made the first step toward getting the improvement you have doubtless wanted for a long time. I send you our best wishes and cordially invite you to write to us or consult our advertisers or their local representatives whenever you reach a point where you need outside suggestions.

Sincerely,

Kirk Fox



Like Topsy, Farmsteads "Just Grew Up"

LIKE Topsy, farmsteads just grew up. Around the house, which was usually built first, service buildings were clustered as need required, with seldom much thought given to convenience, fire-protection, or the comfort and health of the farm family. Buildings were constructed from the material most easily obtainable. From a utility standpoint, our forebears wrought remarkably well, so that today some of their buildings still stand as monuments to sound and honest materials and workmanship. With perhaps a grand old home that has been in the family for generations as an inspiration, farm families face a big building job today if they are to draw the enjoyment from farm life that is their right.

Modern machinery and farming methods require radical changes in the arrangement of the farmstead, as well as in the construction and arrangement of the buildings. Expensive horse barns are perhaps occupied by the single cow pony remaining on the farm. Maintenance costs continue, while the owner is handicapped for need of a building fitted to his conditions. Increase or decrease in volume of business from the farm has often thrown the building investment out of proportion. Service buildings must be supported by the farm enterprise and have no claim to fancy gadgets that increase their annual maintenance cost. Sturdy, simple de-

sign should be the owner's source of satisfaction.

The grand old home, provided you are among those fortunate enough to have one, was constructed when a central heating plant was a luxury in the millionaire's house, and long before electricity and running water were enjoyed by anyone in this country. To accommodate those conveniences deemed essential for a satisfactory home today, the old house must undergo many alterations. Here is where a taste for luxury may be indulged. An inscription on a Swedish building may well mold your judgment in this respect: "Eat below your earnings, dress according to them, and establish your home above them."

Agriculture has hopes of a stability not enjoyed since it was carved from virgin prairie and primeval forest. No longer do the farmer and his wife live content in unpleasant surroundings, secure in the thought that they will spend their declining years in some sunny climate. They look forward to spending their declining years on the farm made dear thru years of joy and sorrow together, where old neighbors can drop in for a friendly afternoon visit, and children and grandchildren return for happy reunions. And as they build strongly and sturdily for the years to come, they are content in the assurance they have built not alone for themselves, but for the welfare of all our America.

To the family who knows

FARMING IS THE WAY TO LIVE



Kirk Fox shows a farmer friend how other farmers are cutting costly building items

JIM and his family are among those who know farming is the way to live. For 18 years farming to them was merely a way to make a living. In favorable seasons they paid off some of the debts piled up when crops were poor, only to slip back again later. And all the time they worked as hard as neighbors who enjoyed life and got ahead a little each year. At last, thoroly disgusted with drifting, Jim decided to take complete stock of himself, his farm, his family, and his buildings. He emerged with an objective and organized his efforts to reach it. Today, 10 years later, he is a different individual.

Immediately an inventory was taken of everything on the place. The house needed complete renovation, and most of the service buildings were ready for replacement. A list of all the needs was made; and it was a staggering one, thoroly discouraging. But long evenings of study produced a farmstead arrangement—barns, fences, and buildings—to fit better into the general farm plan. The whole family took on new interest and new life, and in spite of the staggering load ahead, changed from a negative frame of mind to a positive one. Plans for the future were never again at a standstill on that Minnesota farm.

Your buildings are unusually good if they suit you perfectly. Do they fit the present needs of the farm and can they be kept up at a reason-

able cost? To help you find your own answer, we gathered the material for this book. On its first pages are many pictures with brief discussions of what a good building should be. It will help you fix in your mind the kind of farmstead you will have 10 years from now.

But you must use everything now on the place, so you will immediately take an inventory of all buildings and their condition. Like Jim, you may find the job a big one and only by setting aside a definite sum each year for repairs can you accomplish it. The inventory in the center section is to help you get the situation in hand.

Then when you are ready to start building, the manual in the back of the book will help you with the practical details.

May you enjoy your excursion thru this book and emerge with an inspiration to evolve a long-range program whereby a careful, annual check of your objective and the condition of your buildings will keep you on the straight track to the farmstead of your dreams!

Kirk Fox

Editor, **Successful Farming**



The entrance to this new home says a cheery "Welcome!" to those who wish further comfort in farm living. See floor plans on page 13

THE HOUSE . . . is it a real farm home?

WHETHER you're remodeling an old house or building a new house, the first and most important step is to analyze the needs of your family and then plan the changes (or the new house) to fit those needs.

Until *Successful Farming* presented the basic principles of farm-home design more than 10 years ago, few people realized the need for the special planning of farm homes. A farmer wouldn't think of hauling grain to market in the family car, yet many families built on their farms new homes planned for city living. They were attractive, it's true, but they were no more fitted to the living needs of the farm family than a Pullman car.

On the following pages we present the basic principles of farm-home design; but before going into the details of "The Big Three," as *Successful Farming's* architect-editor, H. E. Wichers, has labeled them, there are a few important factors to be considered in selecting a new farm-house design or deciding on plans for remodeling:

While it seems desirable that a farm house should have at least six rooms—kitchen, workroom, living- and dining-room, and three bedrooms—in order to accommodate its varied needs, the actual number of rooms is not so important as their size, their planning, the storage facilities, and equipment provided, and the possibility of maintaining accepted standards of temperature, cleanliness, and order.

Room uses will depend upon the individual family, of course, and the family's practices and habits will influence greatly the location of the various rooms. It is usually desirable to have the bathroom on the first floor if there is no washroom or lavatory there; otherwise, it logically belongs on the second floor adjacent to the bedrooms.

A combined dining- and living-room has been one of the

happiest solutions to the problem of finding space for an additional room. More frequently, however, the combination results in increased comfort for the entire family in the enlargement of the important room—the living-room. It's meant to be *lived* in, and go where you will these days, you'll have difficulty finding the old-fashioned parlor that was used only when there were special guests.

The bedrooms have more than a little effect on the happiness and comfort of the family, particularly of the growing children. The rooms can be small, but ventilation and heating facilities are important. And closely associated with bedrooms is the need for roomy closets. If you've lived in an old house for years, you'll know the importance of closets—plenty of them. Not only a closet in every bedroom (two of them, if possible), but you'll want to plan closets for cleaning equipment, work clothes, for the children's things, and for all the extra equipment that is essential in a farm home.

THE problem of obtaining ample storage facilities in a farm home is perhaps one of the most important and yet most neglected of all the things to be considered in remodeling or building a house. Neglected, too, has been the business center in the house. Usually, it doesn't exist, but businesslike husbands and wives are realizing that a convenient desk, with a system for filing important papers and records, is one of the first essentials of an efficiently managed home.

Whatever changes you make or plans you contemplate for a new home, keep in mind the needs of your own family. After all, the home is the center of farm life; many are the social and leisure activities carried on there. Efficient planning for the increased comfort and convenience of every member of the family brings invaluable dividends in farm living.

Basic Principles of Farm Home Design

1 ENTRANCE ON THE DRIVE

IN REMODELING an old house or building a new house for your farm there are three basic requirements that contribute to its convenience, comfort, and appearance. The first of these is the location of the main entrance on the driveway.

Nine out of ten existing farm homes face the highway and there is seldom any thought given to the reason why they should face that way. Logically, almost every guest comes to the back door because that is the easiest way, and often enough, there is not even a walk leading from the driveway around to the front entrance. If you're building a new house, the location of the house in relation to the drive and the rest of the buildings should be one of the first considerations.

Remodeling a house to conform with this first basic principle often presents a serious problem; but a little thought is often well worth while. For example, it was not advisable in remodeling the home pictured on page 20 to transfer the front entrance to the side of the house facing the drive; neither was it necessary. Stepping stones laid across the front lawn to the driveway are a standing invitation for the visitor to come in the front door.

If the drive and walk are properly planned, the first temptation is to stop directly in front of the house. An easily opened gate and a neatly clipped lawn with a few appropriate and correctly placed shrubs are features no friend or stranger can resist. If your drive and lawn are inviting, the visitors will be standing at the front door almost before they realize it. A knocker or a door bell should be on the front door. They always convince the stranger that here is a family that is friendly and has been expecting him.

IN MOST sections of agricultural America, well-built houses are necessary for the greatest comfort. Proper location of the home on its site depends on the relative values of comfort in winter or in summer, and of convenience in respect to the location of the other buildings, the farm driveway, and the public highway.

If there is a conflict the proper location in relation to the sun and the prevailing winds usually takes precedence over the others in regions of extremes of climate. In the colder sections of the country, winter comfort is usually of most importance and the house should be so located that the living and working areas receive the benefit of the winter sun and are sheltered from storms by the rest of the house.

On the other hand, summer comfort should receive careful thought in sections of long periods of heat. Bedrooms and porches used in summer should be so placed as to catch the summer breezes.

Thus it may be that a re-location of the driveway, the addition of an attractive walk leading to the front door from the driveway are all that are needed to achieve for your homestead the No. 1 basic principle of farm-home design.

If that is true, don't have just one driveway; add another so that one can be used exclusively for deliveries to the house and the other for the heavy wagons and trucks that are used on the farm. You'll be delightfully surprised at the ease with which it's possible to keep both

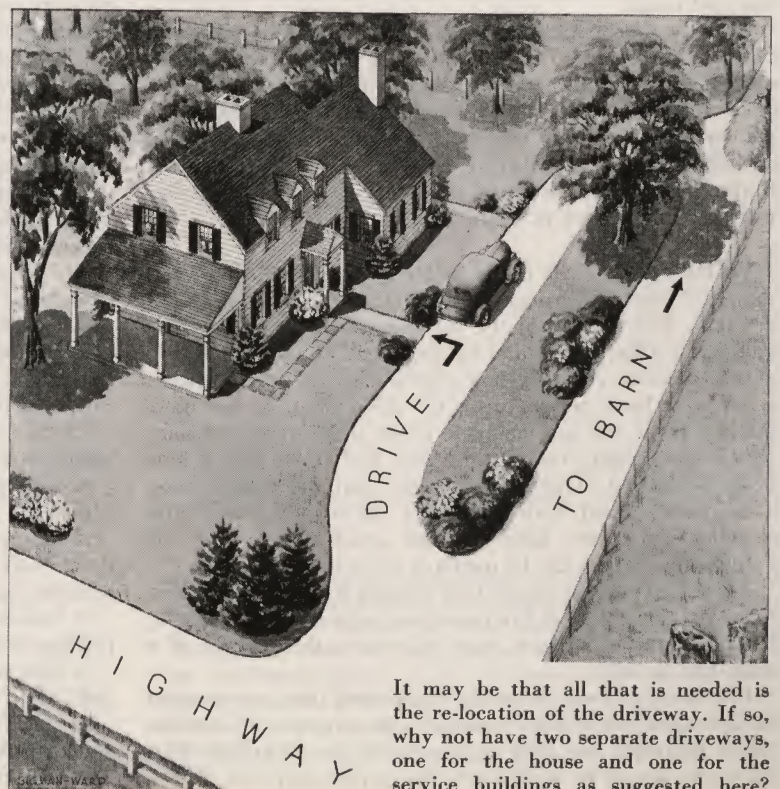
driveways neat and orderly. They are an asset to the home.

Line them with shrubs or with picturesque rocks or stones picked up over the farm and you'll find that every member of the family will want to do his share in keeping them neat and attractive. Not many of the world's inhabitants are trail blazers so naturally everyone follows the most-used path. Just lay out that path; it will be followed and you won't have every car, truck, and wagon making their own individual tracks across your farmstead.

While it is more important to protect the service entrance of a farm home than the front entrance because it is more used, don't neglect that part which is always exposed to the view of the public. Does the front of your house wear a pleasant expression? It should extend a friendly welcome to all who pass. It can be made attractive as well as protective. A small closed-in porch of good design is usually to be preferred to a large rambling porch that costs a great deal more to keep screened and painted.

It will help to keep snow, rain, dust, and cold winds out of the house, prevent chilling of the interior and provide safety and convenience to persons entering and leaving. A light of low-wattage should be placed properly to give adequate light to the steps. Or, lacking electricity, place a hook on which to hang a small lantern. A small but important detail such as this will give your home added personality and distinction.

If you're not satisfied with the way your farmstead is laid out, turn to page 34 and indicate on the special form provided there the exact location of all buildings, trees, shrubs, garden, drives, etc. Then turn to page 47 and indicate the way in which you'd like your farmstead to be arranged. It's bound to give you ideas! And you'll be taking that important first step—making a plan—toward an attainment that will mean increased enjoyment for all the family in farm living.



It may be that all that is needed is the re-location of the driveway. If so, why not have two separate driveways, one for the house and one for the service buildings as suggested here?

2 THE WORKROOM

THE FARM home workroom is the one room in the house where all the major jobs of homemaking should take place, such as washing, ironing, canning, and poultry-dressing, and where all the equipment with which to do these jobs should be kept. The ideal location for this room is on the first floor joining the kitchen and opening out on the service area of the yard.

The first-floor plan makes it more accessible for bringing vegetables from the garden and also for the men coming with milk from the barn. In fact, it's fast becoming the custom to bring all household duties out of the darkness of the basement to the light of ground floor. One big argument in favor of this is economy.

IN THE light of all the activities which are to take place in this room, let's consider equipment and its arrangement. First of all, how about the water supply? If you have running water, the sink will go on the wall adjoining the kitchen, since the same plumbing can serve both. The type of sink depends upon your choice. If there is no running water in the home, a pump may be attached to a sink. A convenient hot-water supply is essential in this room. Near the sink, there should be a range for use in canning.

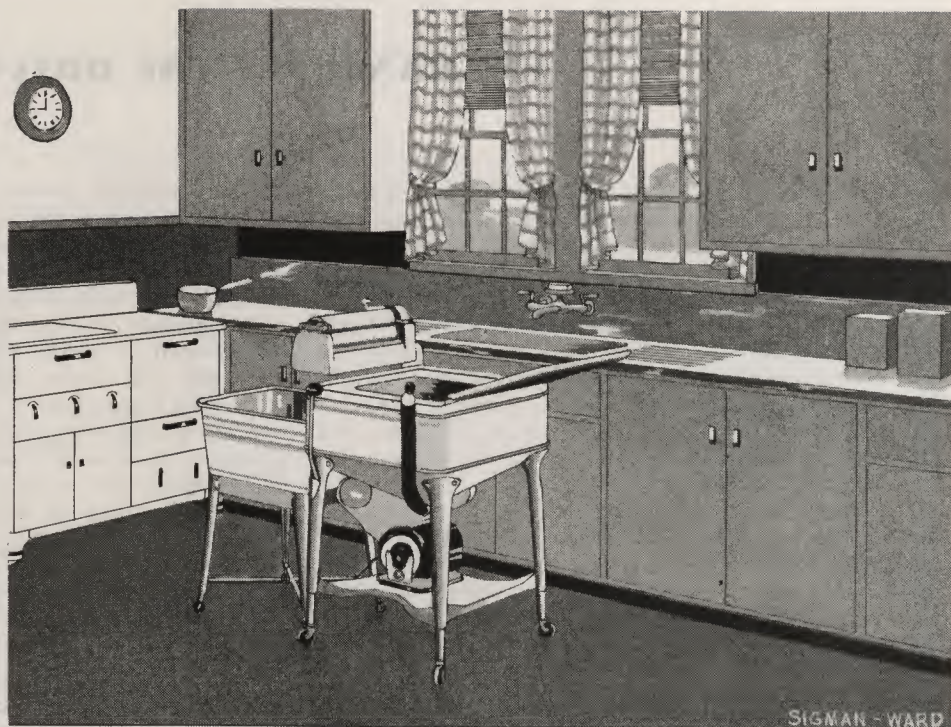
If there is a furnace in the home, it will furnish heat for the workroom, and a liquid-fuel or gas range may be used for cooking heat. If heat is required in the room, select a wood and coal range.

Near the sink should be a stationary combination table and cabinet. The cabinet beneath should be used for storing canning equipment and other utensils. If the table top is unfinished wood, it would make an ideal surface for carving meats, poultry, and preparing vegetables for canning. Later on, an oilcloth cover may be thrown over the top of it for sorting clothes for the wash or sprinkling them for ironing. Another table is really needed in this room.

IN THE center of the room, within a convenient distance of the water supply, the range, and this table, should be the laundry unit. This consists of the washing machine, the gasoline motor, the tubs, the clothes hamper, and ironing board. No matter whether your washing machine is run by electricity, gasoline, or hand power, this is the place for it. At one time, life in a home was not complete unless there were stationary tubs in the laundry room. But a new and better idea is now being advocated. This is lightweight portable double tubs. They have curved bottoms with a drain which facilitates cleaning. Since they glide on their small casters from the slightest touch, they can be used any place in the room.

These tubs may be adapted for washing fruit jars at canning time, and moving them from stove and table. If a lightweight, flat lid is made for them, they may serve the purpose of a table top as well.

If yours is a home where the dairy work does not demand enough attention to have a house of its own, you'll want the cream separator and milk equipment in the workroom. This dairy unit should be placed near the outside entrance.



Think how such a room, by keeping the trail of these duties from the rest of the house, helps to save Mother's time and energy! A workroom should be one of the first things to plan when you remodel your home

Another unit in this room is to be devoted entirely to the men of the family. This may be an alcove or some corner next to the outside entrance where they may hang their hats, coats, and place heavy boots. This place must be well ventilated, since their clothes are sometimes damp. A low shelf for shoes that won't hang, and a nail for boots are popular schemes.

A HOUSEHOLD tool kit may be built on the wall with a stall for every device and a drawer for nails, tacks, pins, string, tape measure, and all those necessities. Or this may be made in the form of a portable case, including all the tools and tacks, which Mother may carry to any part of the house where and when she wants to use it.

Another important item in this room is the cleaning closet. Place it next to the kitchen door. Get one large enough to keep all cleaning powders, soaps, waxes, polishes, dust cloths, as well as mops, brooms, and sweepers.

Remember, above all, to keep this room gay, light, and cheerful, because it is the business end of homemaking.

The following equipment may be placed in the farm home workroom: stove; water supply with sink; portable table; stationary table with cabinet beneath for supplies, and with wood-en top to use when butchering, dressing poultry, and so on.

Laundry equipment: washing machine with portable tubs; iron and ironer; clothes hamper.

Closet for cleaning equipment, such as brooms, sweepers, waxes, dust mops, and furniture polish.

A dairy unit: rack for milk pails, cream separator, and cream cans.

A supply cupboard for all types of kitchen linen such as tea towels and dish cloths, soaps, bluing, water-softeners, starch, scouring powders, scouring mitts, and so on.

A convenient space for storing canning devices including pressure cooker, glass jars, and small equipment.

A high stool for ironing and a stool for the worktables and sink.

A clock; a mirror; medicine chest; first-aid kit; coat, hat, and boot rack.

A tool kit or cabinet with a drawer for tools is necessary.

3 CENTRAL REAR HALL

THE third and last of The Big Three is probably the most important because it deals so intimately with every member of the family in everyday living on the farm.

It is the Central Rear Hall.

Everyone knows that most traffic in and out of the home goes thru the rear door, which can mean but one thing: that traffic is directed thru the kitchen. In many homes the kitchen is used as a central rear hall, and for that reason it is likely to be one of the most inconvenient rooms in the home. That is also another reason why many kitchens are too large to be efficient places for preparing meals.

If the kitchen is large, it is very easy to partition a small area of it for a central rear hall and have stairways and every room on the first floor open into it. Then, from the rear door, one can go to the workroom, the kitchen, the basement, the clothes closet, the dining- and living-rooms, and the second floor without passing thru other rooms.

"The central rear hall gets rid of the pre-dinner confusion," one farm woman told us. "Just about the time when Mother is busiest in the kitchen, the men come in from the field and take over the room." We don't mean that in every instance a large, rear hall should be installed. That's an impossibility in many homes; but usually an attempt to work in the central-rear-hall idea has resulted in a better home arrangement; much better from the standpoint of convenience.

ONE example of how the convenience of such a hall was attained to a remarkable degree without actually rebuilding is shown in the sketches of the room arrangement of the Knapp house which appear on page 20 of this book—"Long Acres—A Triumph in Remodeling."

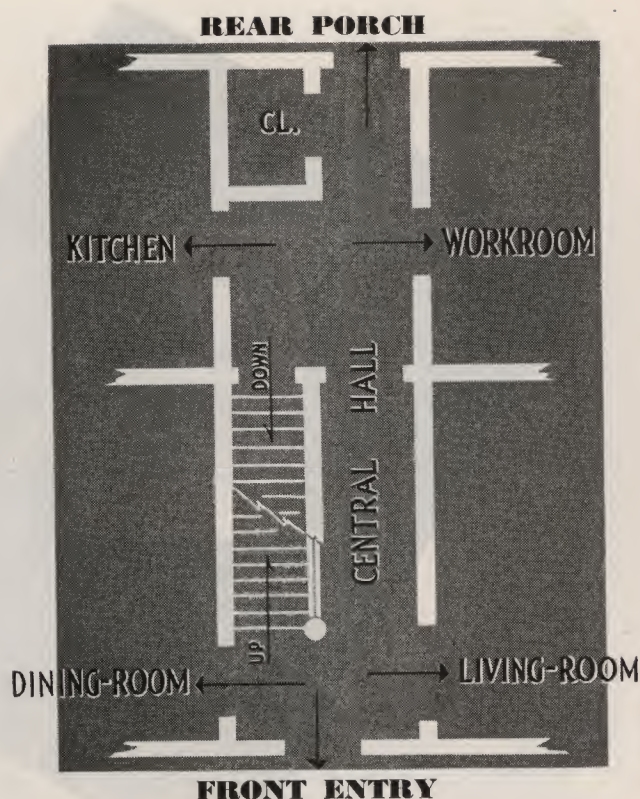
Inspiring, too, is the story of the Bedards' home remodeling on pages 22 and 23—"Rebuilt for Livability." The Bedard family all agreed that a rear hall leading to the basement where the men could change clothes and wash meant livability as much as improvements to other parts of the house. They acquired that livability, as the plans show.

The workroom, described on the opposite page, should open into the hall, of course. Another room of great importance is the washroom, which also should be reached directly thru the hall. It is impossible to estimate the increased comfort and convenience that such an arrangement provides. If it is possible to have a washroom—and in remodeling or new building, a washroom is one of the first essentials—the bathroom logically can be placed on the second floor, adjacent to the bedrooms.

THE installation of a hall is not a difficult structural improvement; nor is it costly. On the contrary, it is one of the biggest improvements in a farm home that can be made with a minimum expenditure of money.

One reason for the low cost is that often the family itself is capable of doing the building labor, eliminating the necessity of employing a professional builder. Occasionally one may require a little professional advice from a carpenter, but the farmer's own good judgment and aptitude with building tools and building materials usually will be quite adequate. In addition, every building materials dealer is ready to give advice on the selection of materials and can provide many extra helps available from the manufacturers themselves.

It is fortunate from a financial standpoint that when a central rear hall is installed, there is usually no need to remodel or rebuild the exterior wall of the house. There are many different types of interior wall materials from which to choose. Perhaps the most practical is some type of wallboard. It's an attractive and economical form of interior finish that is available in a variety of sizes and finishes. This central rear hall need not be a cold, bare approach to other parts of the house.



With most of the traffic in the home going in and out the rear door, the above plan illustrates the great importance of a central rear hall. The ideal arrangement is to have all rooms on the first floor, the basement, and the stairs leading to the second floor directly accessible to this hall.

IF YOU wish a paint finish on the wall, and many people find it cheering and attractive, choose a wallboard that takes paint readily. There are wallboards obtainable today that need no finishing coat of any kind; many come in beautiful panel designs or a wide range of patterns that would lend distinction to this most-used part of the house.

The rear stoop or porch should be considered in connection with the rear hall. If there is already a large porch that is sadly in need of repair, don't hesitate to remove it entirely. Replace it with a smaller, sturdily built porch that is enclosed. You will want it enclosed to increase the protection against the weather.

However, if the porch is large and in good repair, it's a mistake to scuttle it. There are too many uses for it: make it into a playroom for the children, a summer dining-room, or an extra living-room. It can be enclosed with screens in summer and with glass windows during the colder months. If improved in that way, it is certain to add countless hours of enjoyment and comfort for the entire family.

While many families like the extra space a large rear porch provides, it's far better to build a small enclosure that is weatherproof than put up with a large one that would be impractical to weatherproof and which usually becomes a catchall for everything from empty egg crates and milk pails to the children's lunch boxes.

A solid concrete foundation is usually recommended. The steps should be wide and firm—for safety. Too many accidents have resulted from insecure footings and too narrow steps for anyone to afford to skimp on these two points.

● Among the many home-improvement services which **Successful Farming** offers its readers at cost are detailed drawings and instructions for making built-in cabinets for your kitchen. Designed especially for the farm home by Architect-Editor H. E. Wichers, they are complete in every detail and easy to follow by an amateur carpenter. You can obtain "Built-in Kitchen Cabinets" for only 10 cents. Address **Successful Farming**, 9335 Meredith Building, Des Moines, Iowa.



BUILDING A NEW HOME?

**Successful Farming presents five
new homes for farm living, for
which working plans are available**

ON THE following five pages we present five homes which have been designed especially for farm families. These homes are part of the Bild cost Service—a complete farm home building service—which is offered exclusively by Successful Farming.

No doubt you've looked at the plans of many houses and wished that you knew *how much* it would cost you to build on your own farm. Now you can figure the actual cost of a farm home by means of Successful Farming's Farm Home Bildcost Service.

This service includes four parts: The List of Materials and the quantity of each material needed to build each of the five houses; a Specification Form that you and your contractor or building-material dealer may sign to insure your obtaining the exact materials specified; the Working Plans or blueprints; and a Contract Form.

So if you want to know the cost to build any of these five homes we suggest you send for the List of Materials for that home (order by number). These are furnished at cost by Successful Farming—10 cents each.

Simply take this List of Materials to your local building-material dealer, or a contractor. Using it as a guide, with his authoritative experience in material and labor costs, he will be able to figure for you exactly what it will *cost to build* this home on your farm. ("Bildcost" is a coined word on which the Meredith Publishing Company owns the copyright; it means "cost to build.")

Your building-material dealer or contractor will be glad to give you the building cost. When he knows exactly how much material it takes to build the home, it is not difficult for him to estimate the cost. It is good business for him, and good business for you. You need not hesitate to take the List of Materials to him.

When the List of Materials is properly filled out and the totals added, you will have as accurate an estimate as you can get of the cost to build the home. Suppose, then, that you decide to go ahead and build it. Fine; Successful Farming will help you do it by furnishing you with the Working Plans.

The Working Plans can be obtained from us for the nominal fee of \$5 for the first set, which is not only for the plans themselves but for *the right* to build the home. When you pay for the first set, you are privileged to buy additional sets for \$1 each.

BILDCOST Working Plans are not mere sketches or reduced drawings. They are complete, accurate, thoro architect's drawings, as complete as the best architects can make them, from which your builder or contractor can build your home and on which your architect can check.

They eliminate any sort of guesswork and thus save time and money. If you retained an architect to design a home especially for you, such plans as these would cost you anywhere from \$200 to \$300, and that's a fair price for his services.

The Bildcost Specification Form is also a part of the Farm Home Bildcost Service and is sent to you with the Working Plans. It is a written explanation of the Working Plans.

In it you specify the quality of the materials which are to be used in building your home and the kind of workmanship necessary to insure sound construction. It forces all contractors to bid upon materials and workmanship of a given standard. It is, moreover, the basis for a legal contract between you and your contractor. This agreement, signed, will be recognized in court should the occasion arise. In it your interest and personal liability are protected.

AFTER your building-material dealer or contractor has figured the cost to build this home on your farm, you will want the Working Plans and other services from Successful Farming in order that you may start to build your home at once.

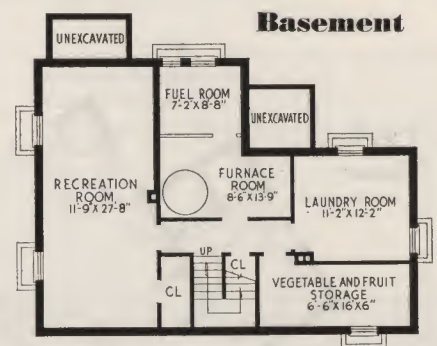
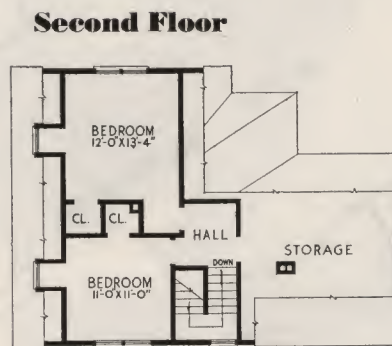
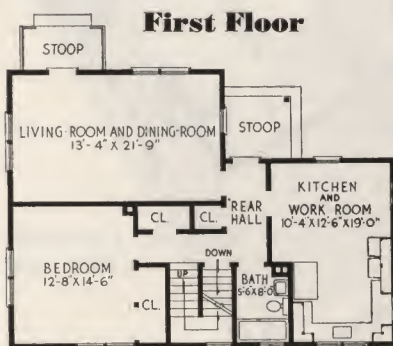
To order the Working Plans, simply write to Successful Farming, Des Moines, Iowa, asking for the plans. Be sure to specify the number which appears on the List of Materials from which your costs were figured.

When you write for the Working Plans be sure to inclose \$5 for the first set of plans and the *right to build the home*, and \$1 for each additional set.

We Call This Home Farmworthy



Bildcost House S7-4



HERE is a home that is planned to be built with the least possible cost, yet has all the spacious charm, the comforts, and the conveniences demanded by modern successful farm living standards. A glance at the floor plans will show you how every square foot of space has been carefully planned to give you full value for your building dollar.

It will cost from \$3,900 to \$5,500 to build this house, the amount varying with the number of modern conveniences added and the difference in cost of building materials in various communities.

Note that both entrances are protected from the weather, and also that the front entrance is so located that guests will be inclined to come to the front door. If they came to the back door you could still direct them into the living-room, if you wished.

The bathroom is accessible to every room, including the two second-floor bedrooms.

A home without a storeroom is like a family without a his-

tory. Surely every modern family possesses keepsakes of one kind or another, and we are sure that an attic on a rainy afternoon has provided many of us with pleasant memories. There are whole armies of mothers who have been grateful that there was an attic in which the youngsters could amuse themselves when the weather was bad. The attic shown does not have a very high ceiling, but it can have usable floor space of approximately 11' x 16'.

The playroom in the basement is intended to be finished in concrete walls and flooring, with plaster or insulating fiberboard on the ceiling. The fiberboard is a real fire protection. It keeps a small blaze from getting directly to the timbers in the floor construction and getting out of control.

● A complete list of the materials needed to build this house can be obtained for 10 cents. Address Successful Farming, 9335 Meredith Bldg., Des Moines, Iowa. Ask for Bildcost List No. S7-4. This is one of five Bildcost homes.



Bildcost Home No. SF-3

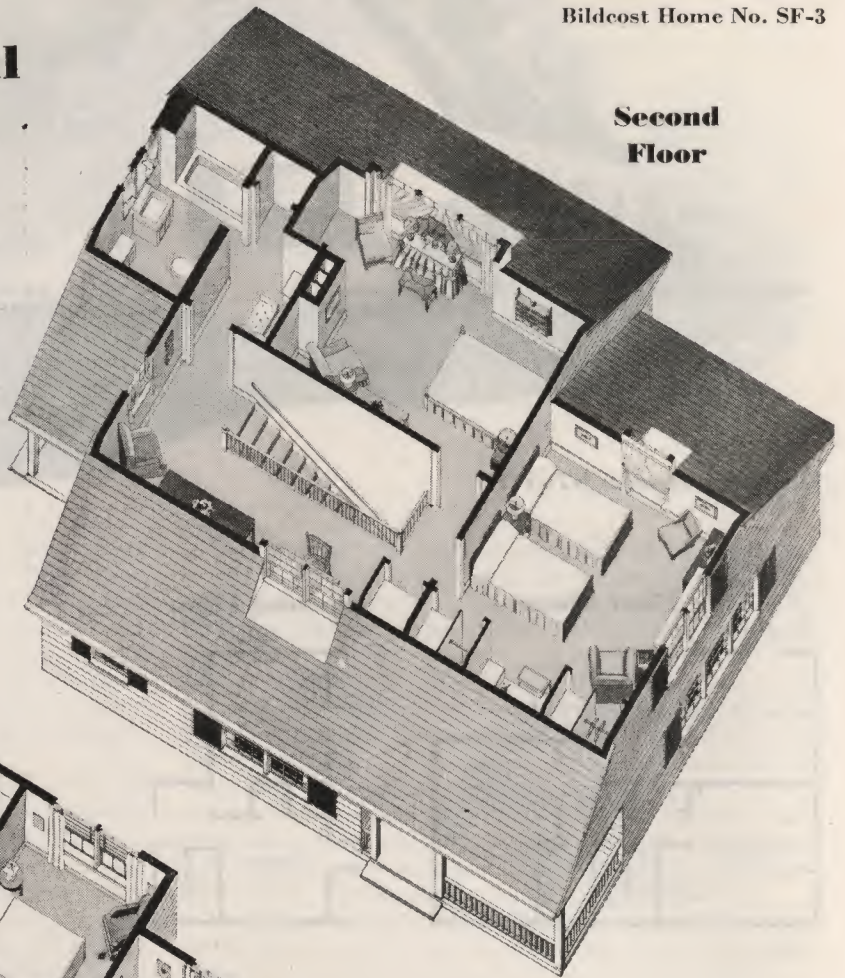
Another Successful

Bildcost Home

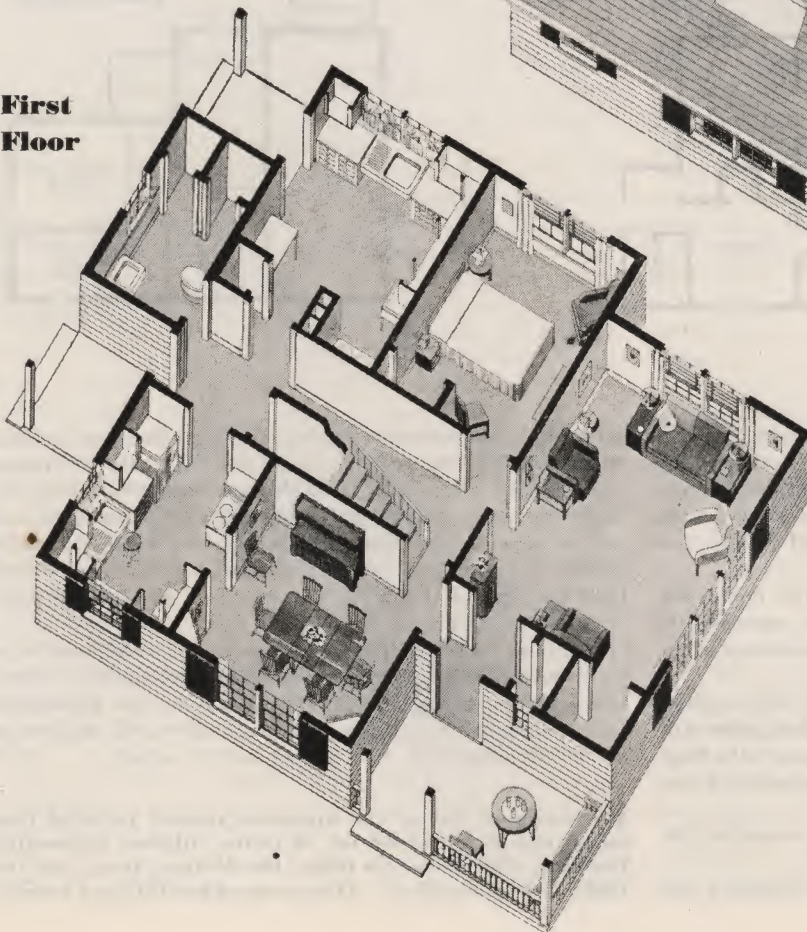
ANOTHER little country cottage is now ready to make some family tremendously happy. All it requires are the acres to surround it; tall, generous trees to shade it; a ribbon of highway to pass it; and a family to own and to love it for itself.

The exterior of this house follows Colonial precedent, with a slight Cape Cod influence. There is evidence of Dutch Colonial in the light curve given to the well-

Second Floor



First Floor



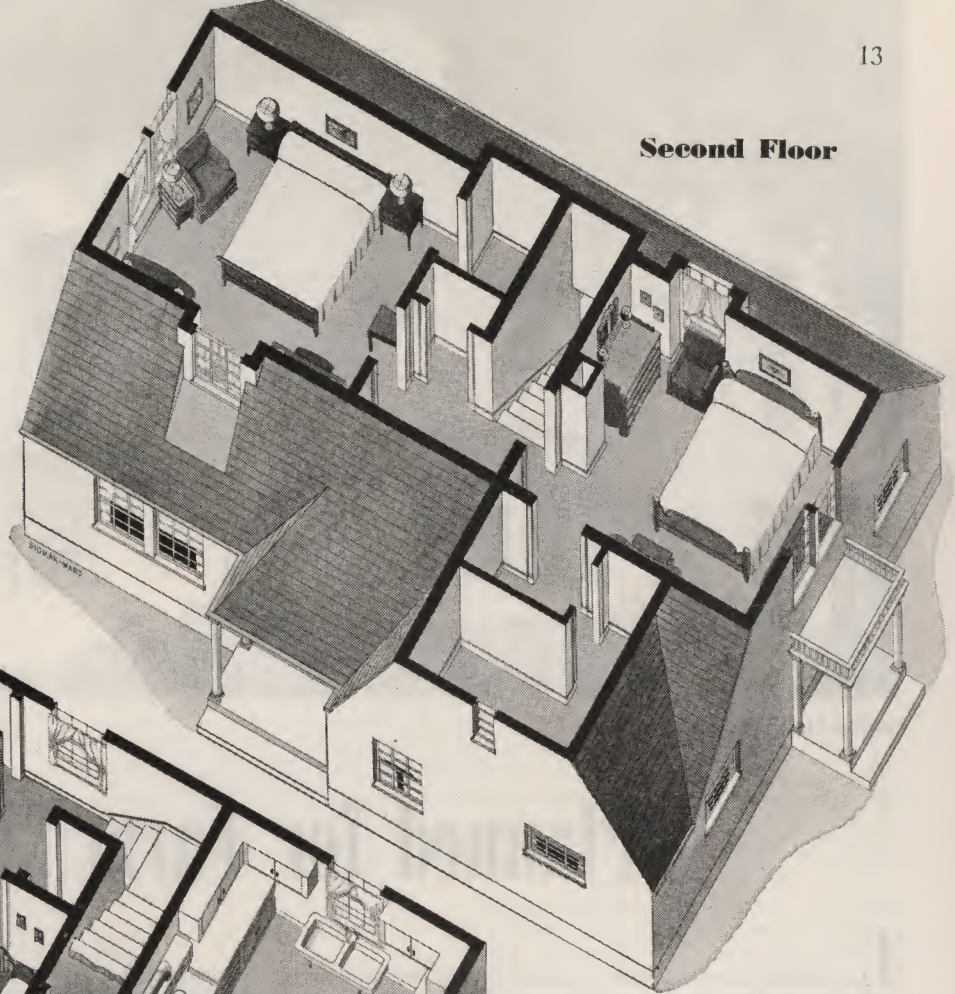
proportioned eaves and cornice. The small porch is in keeping with this type of house.

Living-room	13'4"x18'
Dining-room	12'x12'6"
Bedroom (downstairs)	10'x14'
Kitchen	8'6"x12'
Workroom	11'x14'
Bedroom (upstairs front)	13'4"x13'8"
Bedroom (upstairs side)	11'2"x15'6"
Sewing-room-hall	6'6"x18'
Upstairs bath	6'x9'6"

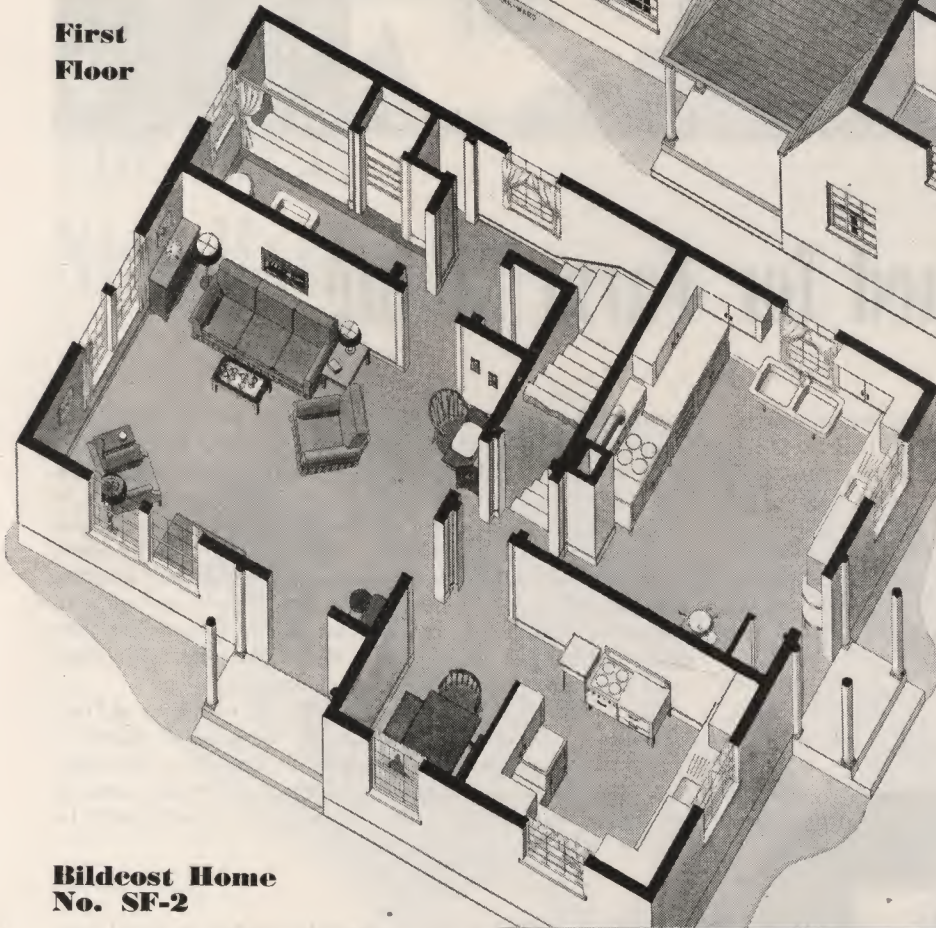
● A complete list of the materials needed to build this house can be obtained for 10 cents. Address Successful Farming, 9335 Meredith Bldg., Des Moines, Iowa. Ask for Successful Farming Bildcost List No. SF-3.

Our Small Home

Second Floor



First Floor



The bath on the first floor comes as a request from our readers, but there is ample space in an upstairs closet for another bath if the budget permits. The bedrooms are almost equal in size, running 11' x 13' and 11' x 12'.

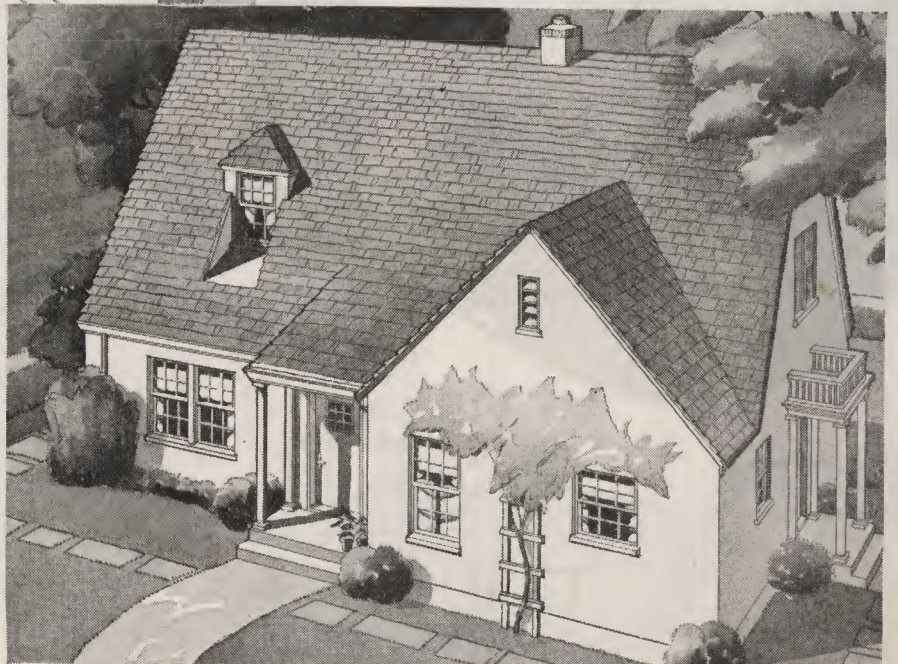
● A complete list of the materials needed to build this house can be obtained for 10 cents. Address Successful Farming, 9335 Meredith Bldg., Des Moines, Iowa. Ask for Bildcost List No. SF-2. This is one of 5 Bildcost homes designed by Successful Farming.

Bildcost Home No. SF-2

ITS convenience lends a feeling of a larger dwelling. Simple and conservative in design, built to withstand all climates, it will settle comfortably into any open-country setting. There is real living promised inside. The first floor consists of living-room, kitchen, workroom, and bath. The living-room is 13'4" x 17'. If properly furnished, its roomage can be extended to include the essentials of a library, radio room, and dining-living-room.

The kitchen is separated from the living-room by a small dinette.

The partition between the dinette and kitchen is open, lending to convenience of service and simplified furnishing.





Bildcost Home No. S7-1

Planned for Farm Living

THIS house is *designed from the inside out* with first thought for the comfort and convenience of the farm family both for purely living purposes and for those farm tasks which must be carried on within the farm home. And as a general rule, you can almost bank on the fact that if the *inside* of a house is arranged to meet the occupants' needs, the *outside* will be attractive.

The first thing considered in designing this house was the routine of a typical farm workday, both for the men and the women of the family. For the women, cooking was taken into

account, perhaps some canning, taking care of the cream separator or other milking utensils, going to the basement for vegetables or canned goods or to store eggs or butter until the trip into town. For the men were considered convenience in coming in from chores and getting ready for meals without interference with kitchen work, bringing in the milk for separating, and so on. Of equal importance to convenient working arrangements were considered the needs of boys and girls, of Dad as a businessman, of the entire family for comfort after chores are done in the evening and at other times when farm work is temporarily placed in the background.

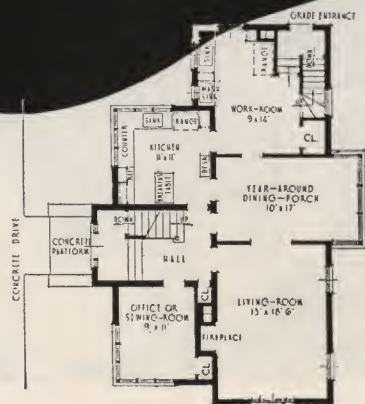
The outside of the house is finished with two coats of Portland cement paint, either white or in color; or, if desired, a finish of Portland cement stucco may be applied to the structural concrete walls. Future maintenance and repair costs on this house, due to its durable, firesafe construction, should be little or nothing.

● A complete list of the materials needed to build this house can be obtained for 10 cents. Address Successful Farming, 9335 Meredith Bldg., Des Moines, Iowa. Ask for Bildcost List No. S7-1. This is one of five Bildcost homes.

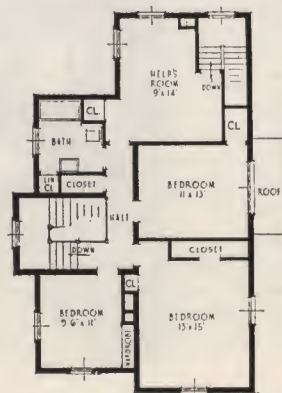


Above: You may prefer a flat roof. Right: An ideal floor plan

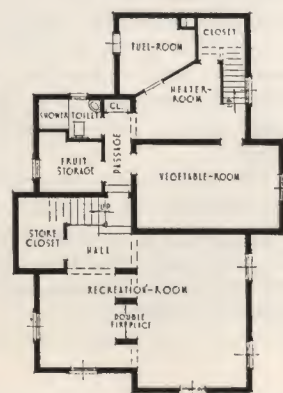
First Floor



Second Floor



Basement





The Ideal New Home

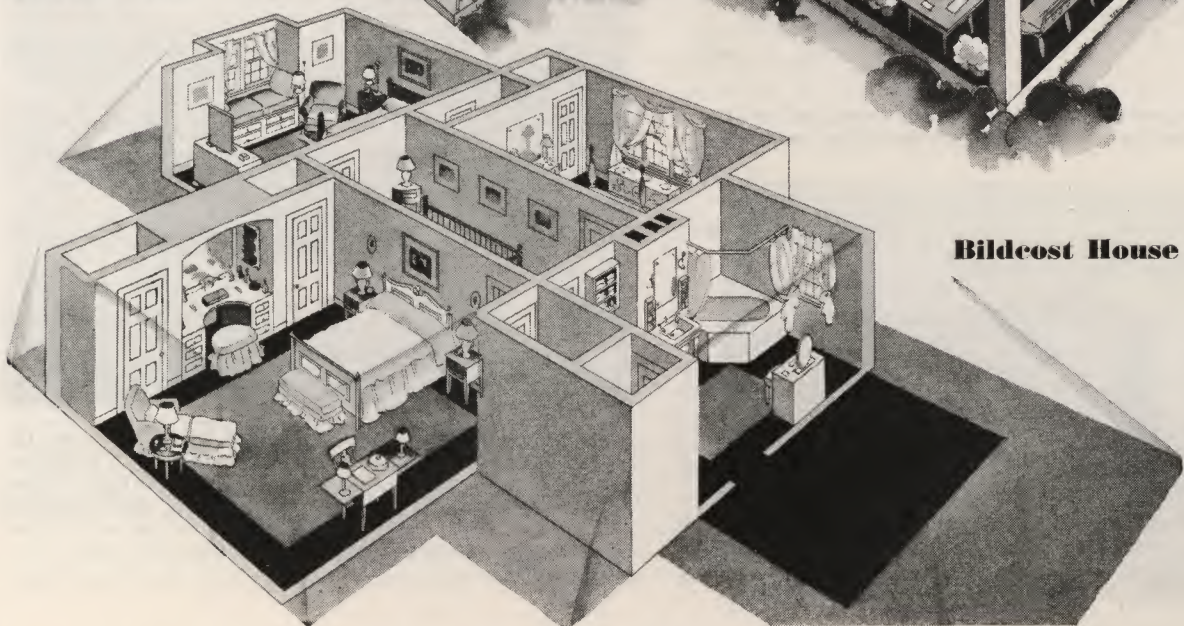
LOOK at the exterior. It speaks for itself. It is not English, Colonial, or Spanish; it is an American farm home. It recognizes its advantage of having beautiful, broad acres as its setting and nestles neatly into its place. As for the interior, the first feature which makes this distinctive as a farm home is the central rear hall. The rooms are: dining-room, 14' x 14'6"; living-room, 18' x 24'; kitchen, 8' x 14'; workroom, 11'6" x 13'9"; first-floor bedroom, 12' x 12'; second-floor bedrooms, 13' x 18'6", 14' x 19', 12' x 15'6"; bathroom, 9' x 14'.

● A complete list of the materials needed to build this house can be obtained for 10 cents. Address Successful Farming, 9335 Meredith Bldg., Des Moines, Iowa. Ask for Bildcost List No. SF-1, one of five Bildcost homes.



First Floor

Second Floor



Bildcost House No. SF-1

A Second House for the Farm



Margaret helps David on a window-fitting job. The house was painted in white with green trim and green roof. They did much of the work themselves

Right: Four -and-a-half rooms full of good planning! The basement has space for laundry, recreation room, storage, and shower



A view of the partially completed house. It is set well away from the home place, facing east over the rolling cornfields



AMONG the many successful second homes being built on farms today is that of Mr. and Mrs. David Zimmerman in Minnesota. David's parents have retired from farming but they continue sensibly to make their home on the farm, while the management of more than a half-section of land is taken on by the younger generation. The second house is the brilliant solution.

Tho the floor plan on this page does not show it, the house is set upon a full basement where laundry, storage, shower, and recreation rooms are arranged around the space for a heating unit. The walls of the house proper are insulated, as is the attic-storage space—all pointing to winter comfort and protection from summer's heat. The arrangement of the rooms is planned for a minimum of waste or repeat traffic in the course of the day's housework; the fireplace is, obviously, "theme center" for the five rooms. The nook between living-room and kitchen will be used for a dining alcove.

The smaller house is set well away from the home place, facing east over rolling cornfields. The owner chose white paint for the cottage plus green for shutters and roof; the background old home place is in gray and green. He said he used the best paints available for a lasting job. He also confided that, because he had supplied much of the labor himself, total cost was not exorbitant. And Margaret's eyes sparkled when the home-furnishings job was mentioned; she plans to call into play her 4-H experience in making every furnishings penny count, every room blend into a composite picture of real farmhouse charm.

Anyone looking over David's new empire will agree engineering and farming must have some points in common. The Zimmerman buildings are right and tight; fences are up, weeds down. Seventy acres in cash crops, a herd of 25 Holsteins, and the Leghorn flock spell diversified farming. Particularly interesting are the two big laying houses arranged for maximum daylight thru window illumination, and insulated against Minnesota's many zero hours.

Such, then, is the home around which these two young people are building futures of successful farming.



The Zimmerman buildings are right and tight; fences are up, weeds down. Seventy acres in cash crops, a herd of 25 Holsteins, and the Leghorn flock spell diversified farming. Above: a view of the well-kept dairy barn with milkhouse in the foreground

Remodeling Your Home?

Before you decide on the changes you wish to make, go over your house from foundation to rooftop critically and carefully. Is it worth remodeling? The inventory on page 36 will help you determine its true value

ARE you making sure that you will have the sort of house you really want when you finish?

All of us have heard the expression so many times, after seeing an old house remodeled: "But it's just an old house, after all." That is the thing you wish to avoid because too much money can be spent on many old homes without satisfactory results.

It is quite possible to rearrange an old house so the conveniences and furnishings are excellent. You should be able to come nearly as close to your ideal in a remodeled house as in a new.

It is difficult for one not accustomed to building, and not acquainted with structural values, to know just when an old property is worth the time and money that will be necessary to make it modern. A thoro examination by an experienced carpenter, architect, mason, or contractor is the only way to make this very important decision. He will tell you frankly about the condition of the joists, floors, beams, and all the other questionable features in your home.

Use Inventory

When you have filled out the pages for the house in the Inventory section of this book, you should have a reasonably accurate idea as to the value of your house and the possibilities for remodeling it into a comfortable, modern home.

Taking an inventory of your house (even tho you're convinced that you will be financially unable to do much about its shortcomings) is the important first step because having a plan down on paper is always an incentive to carry out that plan—someday, somehow.

Here are the important questions you should consider in any plans for remodeling:

Foundations

Are they in good condition? Weak foundations can never be successfully repaired. New ones are always the best investment. If there is a basement, replacement may be an expensive operation. If basement walls are badly out of shape, they have probably warped the main structure, when it sagged to the irregular line of the weakened foundation. Good, firm foundations are most necessary and should be the first thing to consider when planning to remodel.

Are the floors level? Bad foundation conditions are frequently revealed in floors. Floors that hump and floors that slope badly

toward the corners usually indicate foundation trouble, rotted sills, and frequently other defective materials. In many cases, floor-examination proves that termites have destroyed some of the structural members, which means weak foundations.

Walls

Are they plumb? Out-of-plumb walls sometimes tell a bad foundation story. It frequently means that structural members have given way. Re-plumbing old walls is another very serious matter. If structural members are sound, your wall problems will be easy to solve with a minimum of expense.

Roofs

Does your roof sag? A swayback roof is almost as difficult to overcome as poor foundations. These difficulties bring on spreading walls and frequently show up rotted joists or rafters—all of which require considerable reconstruction. A thoro examination inside and outside is necessary before the condition of the roof is thoroly understood.

Doors

Do they fit? Many bad tempers have been caused from yanking at a door which does not fit. Frequently we will find a door that will drag on the floor, stick at the top, or refuse to close. Sometimes this is an indication that the foundation is defective, which naturally shows up in all the other features of the house.

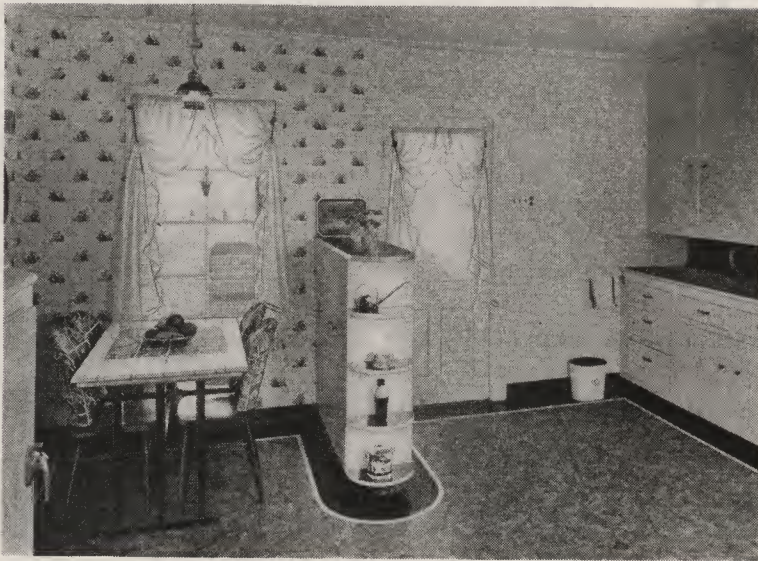
Use of Electricity

There is little doubt that the wide use of electricity on farms has brought about a big change in the farmer's attitude toward his home. Conveniences undreamed of a few years ago are now available at the flick of a switch and he has become suddenly aware of a great many needless discomforts and inconveniences in his home that he had always taken for granted. So he is prompted to do something about them whether or not electricity will be available for his farm.

You'll want to turn to page 61 in this book and study the Building Manual. In that section we have included many ideas and suggestions which offer practical help in your remodeling and building plans.

Your Kitchen

**Remodel for Attractiveness
as Well as Efficiency**



↑
◀ Red, white, and blue are attractive here. Wood work and ceiling are white enamel; the walls a gray-blue, eggshell finish. The dining-nook is papered in silver-barred paper with colorful fruits on a white background. The floor is blue marbleized linoleum, and a black border extends 4" onto the white walls. Work surfaces are cherry-red linoleum, and there are touches of red in the curtains and in the convenient cabinets, too



◀ Mrs. Noel L. Johnston, Covington, Ohio, pictured in her improved kitchen. Gray linoleum on the floor, with matching work surfaces; ivory-painted walls and cabinets. The large kitchen serves as dining-room, accommodating 12 without crowding. Workroom opens off the kitchen, where laundry, canning, and meat-cutting take place

WHAT does your kitchen need? What are the first improvements you should make? The best way to start improving your kitchen is to sit down with pencil and paper and make a rough sketch of the floor plan, and list all your equipment; then check a few questions like these:

Are the large pieces of equipment efficiently arranged? Do you have to take needless steps in the preparation of the simplest meals because your range is too far from your worktable or cabinet? Are the floors so badly worn that they need scrubbing every day to be kept clean? Do you have enough storage space in the kitchen for those things you use every day, or do they have to be stored in the cellar or basement? Is the pantry really convenient, or is it robbing the kitchen of much needed light?

There are scores of additional questions that will have to be answered and that's where your kitchen planning begins. You'll have to make your own rules, for there are no arbitrary rules that can be followed successfully in every kitchen. Each kitchen has to be planned individually according to the size of the family and the work that takes place in the home.

BUT there are certain basic principles in kitchen planning that, if adapted to the individual kitchen, will help to create the successful kitchen that every woman desires and that means

so much to the enjoyment and well-being of the entire family.

When you consider the work that has to be done in the kitchen, you see at once that the room naturally divides itself into three work centers:

1. The Refrigerator, Storage, and Preparation Center for receiving, storing, and preparing foods.
2. The Sink and Cleaning Center for the cleaning, dishwashing, and waste disposal.
3. The Range and Serving Center.

There is a fourth center which we wish to mention here and that is the Planning Center. It may be a small table or desk with handy drawers, or it may be one of those ingenious built-in-a-wall affairs with a drop-leaf concealing spaces for cook books, accounts, lists, etc.

On page 23 is a good arrangement for the U-shaped kitchen, the most convenient shape. The sink has been placed beneath the windows because most of the work in the kitchen is carried on there, and who doesn't like to look out of windows? The refrigerator is near the rear entry, where food preparation usually begins, and the range near the dining-room door. Everything is in an unbroken line on three sides of the room, with a continuous counter from refrigerator to range. This is the ideal arrangement, the fewest possible steps being necessary for meal preparation.

There's Always Room for the BATHROOM

It's one of the first "musts" in remodeling



Today bath tubs are so completely built in that they become a part of the wall and floor. They're easy to clean and to keep clean. The tub illustrated here is designed for a corner



This is a popular location for the tub, making it possible to install a bathroom in seemingly small space. Note design of toilet—low and built to the floor—and handy tank shelf

PIPING water into the house and not installing a bathroom is almost as bad as buying a car and then not using it because you haven't learned to drive. This comparison may seem a bit far-fetched, but not to the family who knows the satisfaction that a properly installed bathroom (with an ample supply of hot water) brings in convenience and in the additional safeguarding of the family's health.

The location of the bathroom depends, of course, on the type and condition of the house. In a two-story home it logically belongs on the second floor, adjacent to the bedrooms; but only if it is possible to have a shower and washroom on the main floor. Otherwise, it is more successfully located on the first floor, convenient for all the family and the homemaker, in particular, since much of her work is concentrated there and in the yard and garden.

Installation of the bathroom should be left to an experienced plumber; there are too many problems to be considered to try to deal with them yourself (if you're not a plumber). He will recommend piping that will last—brass, copper, or copper-bearing steel—for the water-supply, and cast-iron pipe of adequate dimensions for waste. This is very important for a satisfactory job.

Other important considerations are: the vent or waste stack to carry off odors and provide ventilation for the entire system; individual shut-off valves on all tubs, basins, and bowls; a basement faucet to drain the system and avoid freezing damage should you leave the house unheated for any length of time.

Provision for plenty of hot water is essential, of course. Don't under-estimate the amount of water you'll use and get too small a tank. The size of the tank has little effect on the cost of heating water, so you'll have only the cost of the tank itself to consider. Oil-burning heaters, coal-burning heaters, and electric heaters will insure ample supply of hot water.

As for the bathroom fixtures, you will want to make the selection yourself. When you go to your local dealer you'll see a large variety of fixtures, in many designs, color schemes, and sizes—all available in a wide price range.

You will want to keep in mind that fixtures are of four kinds—porcelain enamel on cast iron, baked enamel on steel, vitreous china, and porcelain. Each has its advantages, but the enam-

eled steel and the enameled iron are considerably lower in price than the last two and are quite satisfactory.

Today's tub is so completely built in, it becomes a part of the walls and floors. Easy to clean and to keep clean! Great improvements have been made in the design of the lavatory. There's a cabinet model that has, in addition to improved faucets and trim, the extra flat surface and shelf space for cosmetics and toiletries, a no-splash basin, and a complete cabinet below for soaps, linens.

Toilets are also much better designed. The seats are lower in accord with recommendations made by health authorities. They're quiet, too, and designed for easier cleaning.

Install a shower in the bathroom, either over the tub or in a separate cabinet. These cabinets are reasonable in cost and can be obtained complete in every detail. They either can be built in or purchased as a complete unit.

For walls, there's an almost unlimited variety of coverings from which to choose. Washable wallpapers are popular and contribute a great deal to the decorative scheme. Other inexpensive materials include several varieties of composition and tile-like products, linoleum, and coated fabrics that are very colorful; or the walls may be plastered and painted or enameled in the usual way.

Linoleum is an excellent material to use for the floor, too. If it's not possible to use it also for the walls, extend it up several inches over the baseboard to make cleaning easier. There are many smart composition and tile-like products, rubber tiles, cork carpet, and special woods available for use for the bathroom floor.

There are waterproof materials for shower and window curtains in bright colors and patterns and many other sundries that will help you to make the bathroom one of the most attractive rooms in the house. Be sure to consider a large medicine or toilet cabinet, a closet for towels and other supplies, and plenty of towel racks; and of course the safety rack to grasp in getting in and out of the tub. It's too easy to slip and fall in the bathroom without taking every precaution.

Good lights, located near the mirror, are usually all the lighting needed in the bathroom. There is seldom need for a central ceiling light with the improved wall fixtures available.

Long Acres—a Triumph in Remodeling



AFTER

BEFORE →

A glance at the before- and after-remodeling photographs and the sketch of the floor plan shows how effective the simple structural changes were. One new exterior wall was added to provide for the living-room. The living- and dining-rooms, 15' x 31', appear as one long room; there is no ceiling separation and only small side partitions with pilaster ends. Entrance is made from the front porch to a vestibule which has a roomy closet. The arrangement of rooms is especially good, it being possible to enter the dining-room from a back porch without passing thru the kitchen or other rooms



TO REMODEL or build new?

This problem, which many a farm family faces today, was effectively solved by the W. W. Knapps of Eaton County, Michigan, when they decided to remodel, and an old but sturdy house on a farm adjoining theirs was transformed into the attractive, convenient home pictured on these pages.

The three essentials of a farm home—entrance on the drive, a utility room, and a central rear hall—were attained to a remarkable degree with very few structural changes. Entrance

is thru the side porch directly into the combined dining- and living-room as well as by means of the cross walk in front. There is a utility room but, altho there is no central rear hall, the arrangement of the kitchen and the location of the stairs, utility room, and office makes it possible to reach easily any part of the house.

The framework was in excellent condition and only one exterior side was added—the front of the living-room. New basement walls and excavation for more space for storage, plus a stoker-equipped, air-conditioning

plant, were among the major improvements. A water-softener and heater were installed. To provide for smaller quarters when alone, there are complete living quarters with bedroom and bath downstairs; with two bedrooms, a toilet, and lavatory upstairs.

The living- and dining-rooms, 15' x 31', are so planned that they seem like one long room. The downstairs bedroom has the original random-width board floor, some maple and some pine. This was sanded and finished with light-brown stain and waxed.

The old pantry was converted into an office. After removing the old shelves and cupboards the room was 6' x 9½'. A desk was built across one end under the window. The top is a ¾"-thick plywood shelf, 24" wide, with three drawers built under the left side. There are three built-in shelves, curved on the edge, each side of the window for books.

Off the office in a hall leading to bath and inside cellar stairs also is a good-sized closet for work clothes, shoes, and hats. It is most convenient to hang up the old clothes and take a shower without going thru the other rooms.

THE kitchen is very handy, with plenty of hot soft water, electric range, and refrigerator. Off the kitchen is the utility room. From the kitchen on the drive side is a large porch. This is screened in summer and glassed in winter. The screens and sash are so designed that they may be quickly changed. The principle of the fixture on screen and glass is the same as that on the combination doors on the market. From this porch you may enter the dining-living room, so if a guest stops at this porch he does not have to go thru the kitchen.

The stair steps are light, varnished oak. The hall walls are painted light pea-green; the ceiling cream with silver stars. The hall is narrow and on the light-oak floor Mrs. Knapp uses two black hooked rugs with pink flowers. The white, ruffled curtains are held back with black plaques decorated with pink flowers. Both upstairs bedrooms have light waxed-oak floors. Off the toilet and lavatory is a large linen closet with deep, wide shelves and drawers.

Another unusual feature thruout the house: the baseboards are flush with the walls, leaving no dust-catching tops, and the window sills are left without projecting aprons. This had to be left this way as the sheathing (because of old construction) was on the inside.

"We have built for a permanent home, using good materials," writes Mrs. Knapp. "The pipes, flashings, gutters are copper. From the cut stone on the chimney and the front of the house we have enough left for our Dutch oven.

"Many people ask if we would remodel again or build all new. I'm sure, under the circumstances, we would remodel. We have larger rooms and handy features which we could not get for the same money in a new house. Of course, we spent a great deal of thought and time on plans, and for years I have read and re-read farm and home-decorating magazines. All this had been with the thought that some day we would build."



The old pantry was converted into an office with the desk built across one end; the top is of plywood; there are three lower drawers and three shelves above at each side. Trim is royal-blue paint; the wallpaper is in brown tones, rust, and blue against a tan background

This view is from the living-room → into the dining-room, which is decorated in the same colors as the former. There are only floor-length linen draw curtains in both these rooms, enabling the Knapps to have a clear view from any window. The two rooms seem like one long room, being carpeted from wall to wall in the same rich broadloom



← Another view of the living-room. The vestibule opening from it has a midnight-blue linoleum floor with white stars and gold wallpaper with gray-and-white pattern

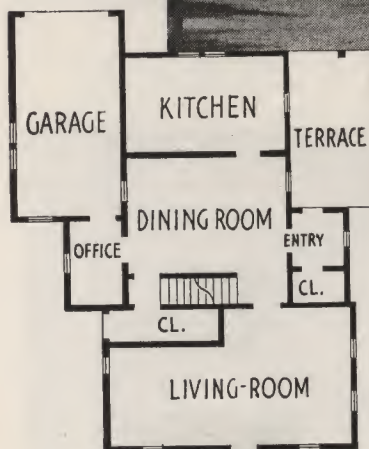
Rebuilt

An outstanding example of a family share-the-work program. The result: a modern home from garden to rooftop

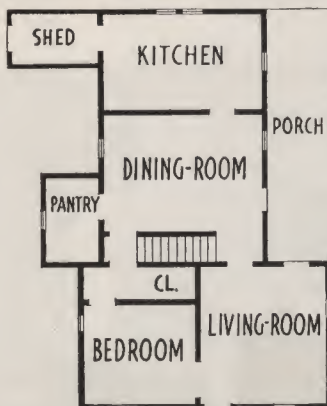
AFTER



BEFORE



First Floor—AFTER



First Floor—BEFORE

The attached garage with its convenient sundeck, the terrace in place of the shaky old porch provide a note of stability that was utterly lacking in the old house. There's an inviting entry on the drive, an entry into a rear hall, and a small brick step in front that are not shown above

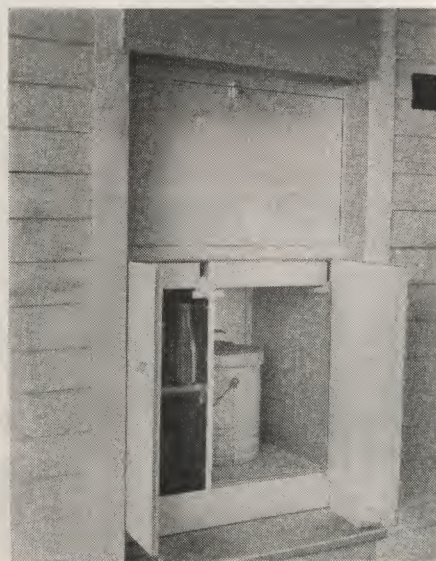
The huge garbage can is housed in a specially built compartment below the worktable. This opens into the garage thru which the garbage can is easily carried



Second floor. Dotted lines show the changes

✦ The major change in the plans was the elimination of the first-floor bedroom and use of the space to enlarge the living-room. The pantry became an office, easily accessible from both inside and outside. A vestibule with adjoining closet was built in part of the old porch space

A central hall on the second floor gave the desired privacy that was lacking before. It's large enough to serve also as a study and Mrs. Bedard's sewing room



for Livability

THE old house did not seem to belong; shabby in its neglect, it stood apart from the rich, fertile acres of the Blackhawk County, Iowa, land that surrounded it. It was totally lacking in the charm, in the ordinary comforts that good planning brings.

Yet the Leo Bedard family looked upon it with a hopeful eye. The roof was good, the foundations sound. Perhaps—with careful planning, wise spending, and a great deal of work—it could be transformed into a home in which the entire family could find real satisfaction and enjoyment? It could!

Many a family get-together was held over magazine house plans, modernization bulletins, and sketches before they actually started the work. Questions and problems tumbled into their plans. Everyone had a special "must have," a certain "want," or a "don't want." Mrs. Bedard wanted a front door that would be *used*, a front vestibule and a coat closet, and no back door to the kitchen! Her husband wanted a rear hall with an entry to the basement and a place down there where the men could wash and change clothes. He wanted a private corner for his desk, and the garage attached to the house.

Charlotte and Ralph wanted their own rooms with private entries into the hall. That *was* a problem, because the second floor looked like a fun house on the midway; one room opened right into another.

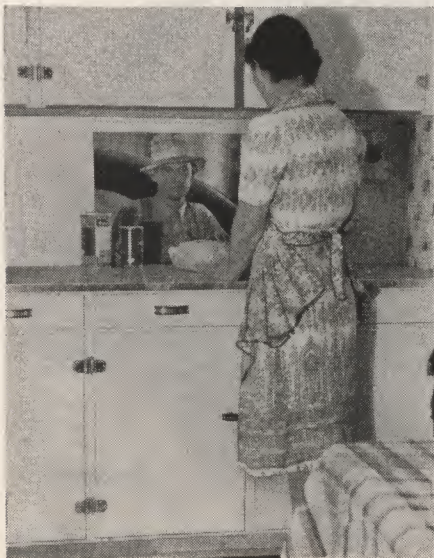
From the start, the four of them agreed on the bathroom. But where in that funny old upstairs could one be installed? What they eventually did was to put in the fixtures and then build the walls around them. The "upstairs" was a real puzzle.

The quartet of problem-solvers who tackled a difficult remodeling job and had a lot of fun doing it: (reading from the left) Charlotte, Mr. Bedard, Son Ralph, and Mrs. Bedard



Now the Bedards just take the groceries from the car, unlatch the wall shelf, and whisk—groceries are in the kitchen. The space for the garbage can is below the service opening

Who had ever heard of a kitchen without a back door? Mother Bedard wanted hers that way and she had it. She said she was "tired of having a runaway thru the house from the kitchen." The delivery problem is solved by the drop shelf that is built in under the wall cabinets—the garbage goes out below and the groceries come in above



Streamlining the Old "Model T"

DO YOU live in a "Model T" house? You pass one on almost any drive you take in your own home territory. They were the original built-to-grow houses, and today there are many of them which need immediate attention.

In remodeling a T-plan house it is wisest to remove all the additions and enclosed porches and start with the fundamental structure. This is what *Successful Farming* suggests for the home on these pages, belonging to George Tjaden of Faribault County, Minnesota.

Because it is in good condition, this is an ideal T-plan house for remodeling. To start with, it has a gravity water system and an electric light plant.

The plans on these two pages present a complete picture of how this T-plan house can be remodeled. The exterior plan shows the addition of a front porch. Two rear porches have been converted into two new rooms. A simple change from the exterior viewpoint, but what a

striking transformation there is inside!

One of the old porches gives way to a completely modern kitchen. This kitchen is slightly increased in size, but appears much larger due to the careful placing of cupboards and working equipment. The new kitchen will not give the old pantry an excuse for existing any longer. Spacious cupboards for equipment, a nice, new, shiny sink, working areas that will work—and even the refrigerator—claim a place in the center of all activities.

ON THE opposite side from the dining-room, a second rear porch becomes the downstairs bedroom. Located at the back of the house, it has much more privacy. This bedroom boasts of two spacious closets and plenty of wall space for chests of drawers, dressing tables, and other commodious furniture.

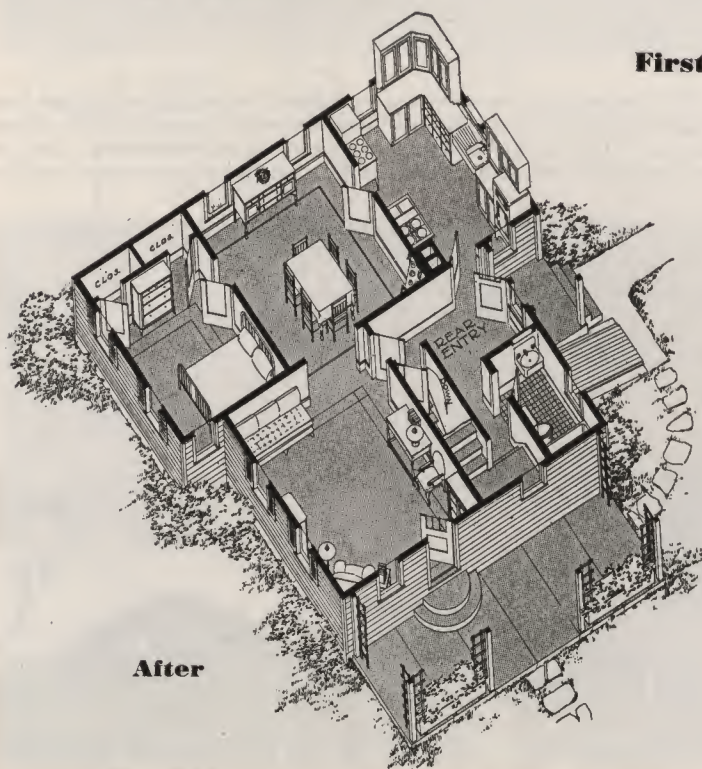
Since the big, old-fashioned pantry is out, its space is made into the all-important rear hall. This rear hall is light

and has sufficient space to use for ironing, sewing, or other similar tasks. Wall space permits the addition of a linen closet and also a boot-cap-and-coat closet in which the men can hang their work clothes.

The front bedroom, next to the old pantry, is changed into a downstairs bath and a completely new stair. This revised stair greatly improves the upstairs room arrangement.

NOW let's follow this new (after) plan thru the house and observe the convenient improvements. This house shows the effectiveness of a skillfully planned rear hall. This one is the traffic center from every room of the house. It leads you directly to the living-room, dining-room, kitchen, upstairs, basement, and to the bathroom. The stairway is directly accessible from the kitchen and the rear hall without passing thru any room. The bathroom is ideally located for convenience of the family.

First Floor



After



Before



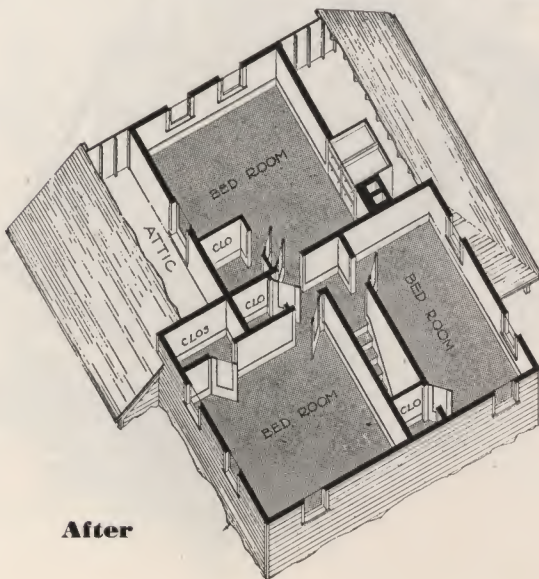
Very little has been done to the living-room, since it fits neatly into the new plan. The door from the living-room to the old side porch has been removed, as has the old connecting door from the living-room to the bedroom. A new door was introduced between the living-room and rear hall. The old front steps have been exchanged for circular steps.

After going over the interior plan, let's look at the exterior. Great changes have been made, but they are so carefully worked out we have the feeling that this house has always been just as it is now planned.

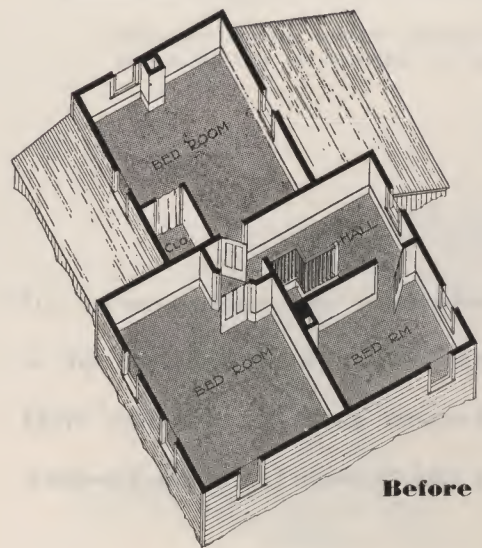


Top: the improved exterior plan suggested for the old house

Second Floor



After



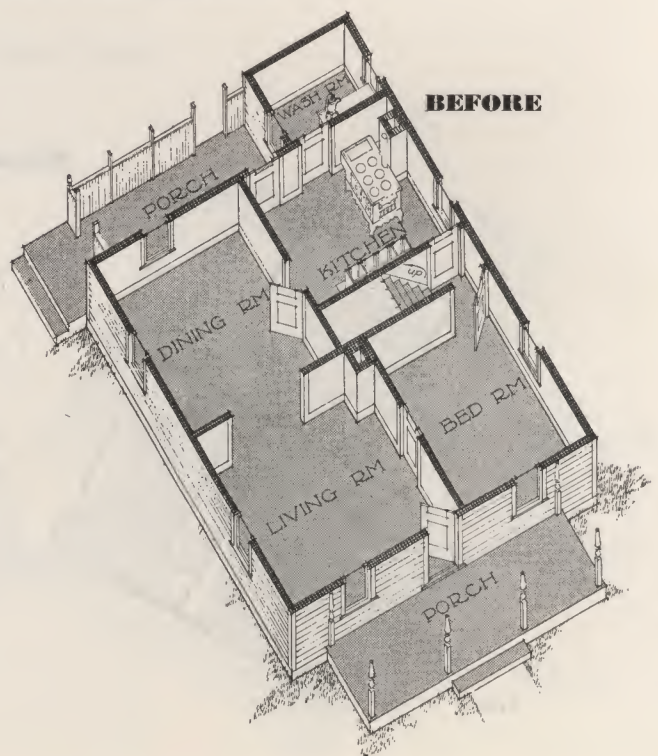
Before

The Two-Story Square House



What charming exterior changes Successful Farming has suggested for this old house!

Note the increased efficiency and convenience provided in the "after" arrangements



A complete rearrangement of rooms, with the addition of a workroom and bathroom, will make this house truly up-to-date

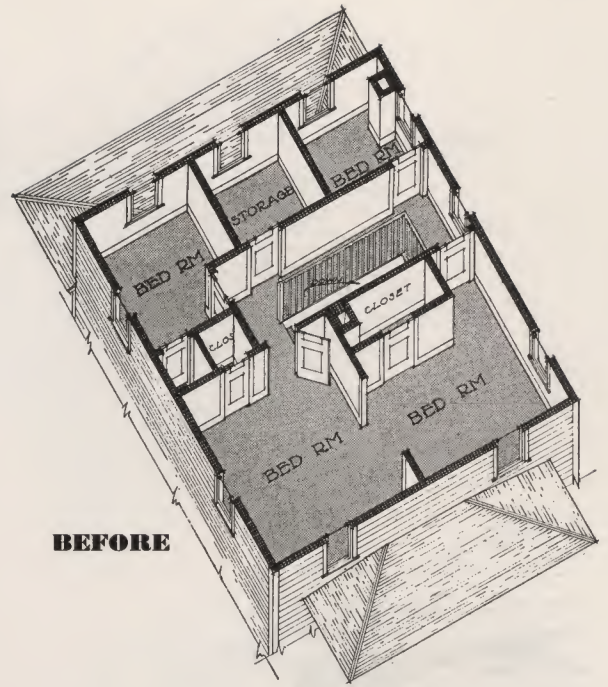
Becomes Livable

THE two-story square house is one of the most difficult types of houses to remodel, especially if the home in question is of any size. It can be done very well, however, as you will see by studying the changes Successful Farming has suggested for the old house.

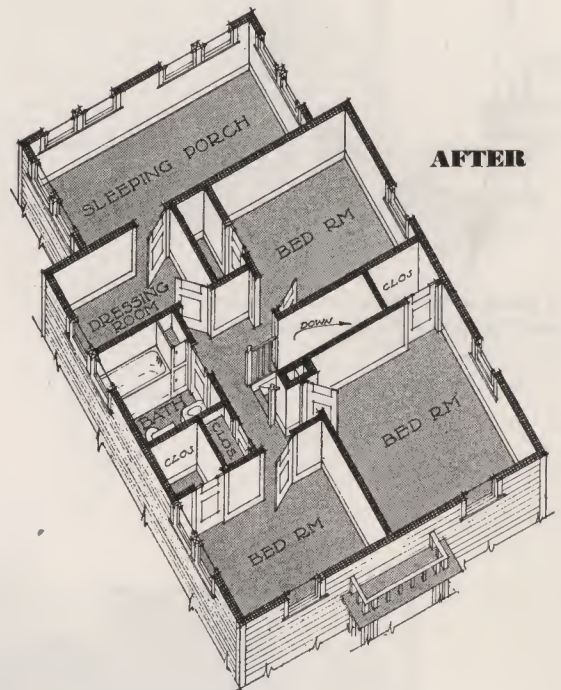
In any scheme that is not well thought out for remodeling the two-story square house, one is likely to have useless room left over in the center of the house. Most houses of this type have 8 square, box-like rooms. None of them were designed with any particular purpose in mind and, of course, very few of the bedrooms had closets.

Note in the new "after" plans that there appears to be a correlation of rooms. The old living-room and the downstairs bedrooms have been thrown together for a large, comfortable combination living- and dining-room, with a fireplace. The old kitchen was small, inconvenient, and it had very little light. The new kitchen and workroom are efficient, with furnishings introduced according to working areas.

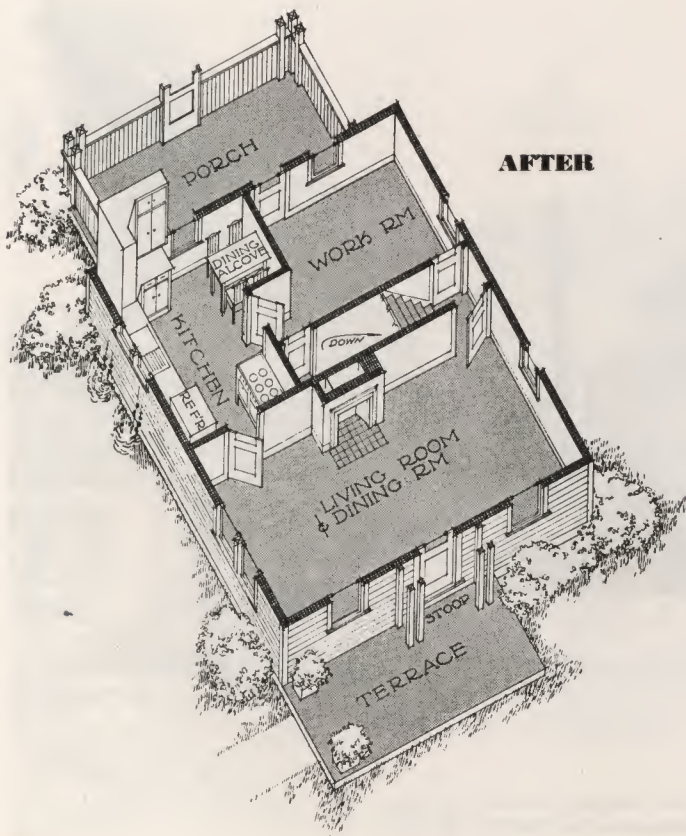
Halls seem to come to our aid when convenience is blindly shut out by awkward placement of doors and rooms. The compact bath and hall arrangement in the second-floor "after" plans, and the increased closet space show this. In the new plans the stairs are enclosed, which is usually a more convenient arrangement for a farm home. And the sleeping porch with a dressing room is an ideal change.



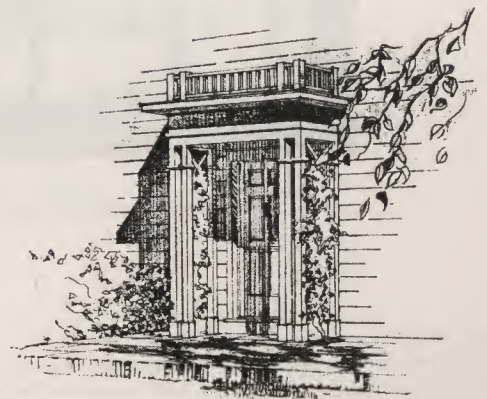
BEFORE



AFTER



AFTER



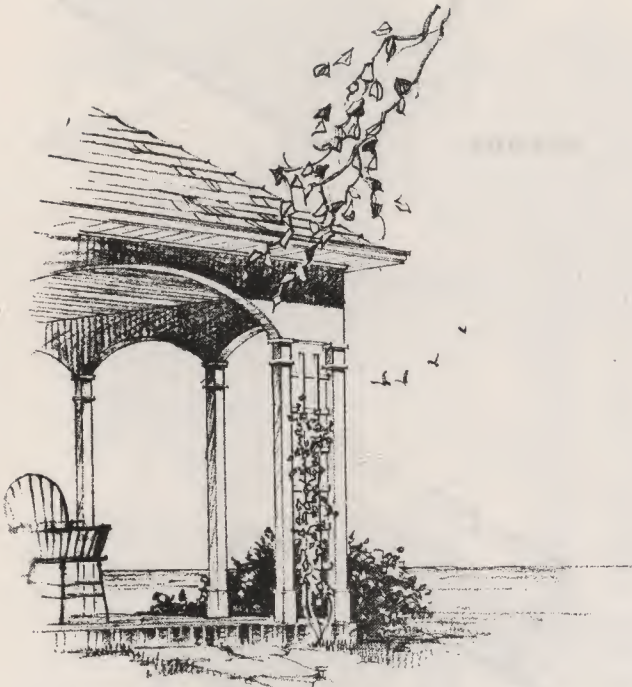
A New Life for the

THE one-story bungalow houses have been the ugly ducklings of the house family. Apparently the architects have never loved them much, since these small bungalows are usually so awkwardly assembled. The arrangement of the old house illustrated here shows that little attempt was ever made to make the house fit its purpose. In plans shown here, Successful Farming has suggested a much-improved floor plan for this home. There is little more enclosed floor space, but because of well-thought-out changes, three bedrooms, a combined dining-room and living-room, and a new bathroom, workroom, and kitchen have been incorporated in proper sequence.

In the new plans, the bath and bedroom are connected by a small hallway which is a neat solution to an old, old problem that invariably looms up in any attempted rearrangement.

The old front porch has been enlarged to a charming new one, of which a detail is shown at the left. There is also a new back porch leading off the workroom.

The workroom, located where it is, has excellent ventilation facilities, is convenient to the rear door, the kitchen, the basement stairway, and to the hall leading to the bathroom. By eliminating the old pantry (usually dark and difficult to ventilate), and using that valuable space for part of the new kitchen, there has been achieved a great improvement in the room upon which the family's health and well-being so depends. Note that closets have been planned for each of the bedrooms.



A detail of the attractive new front porch suggested for the house below



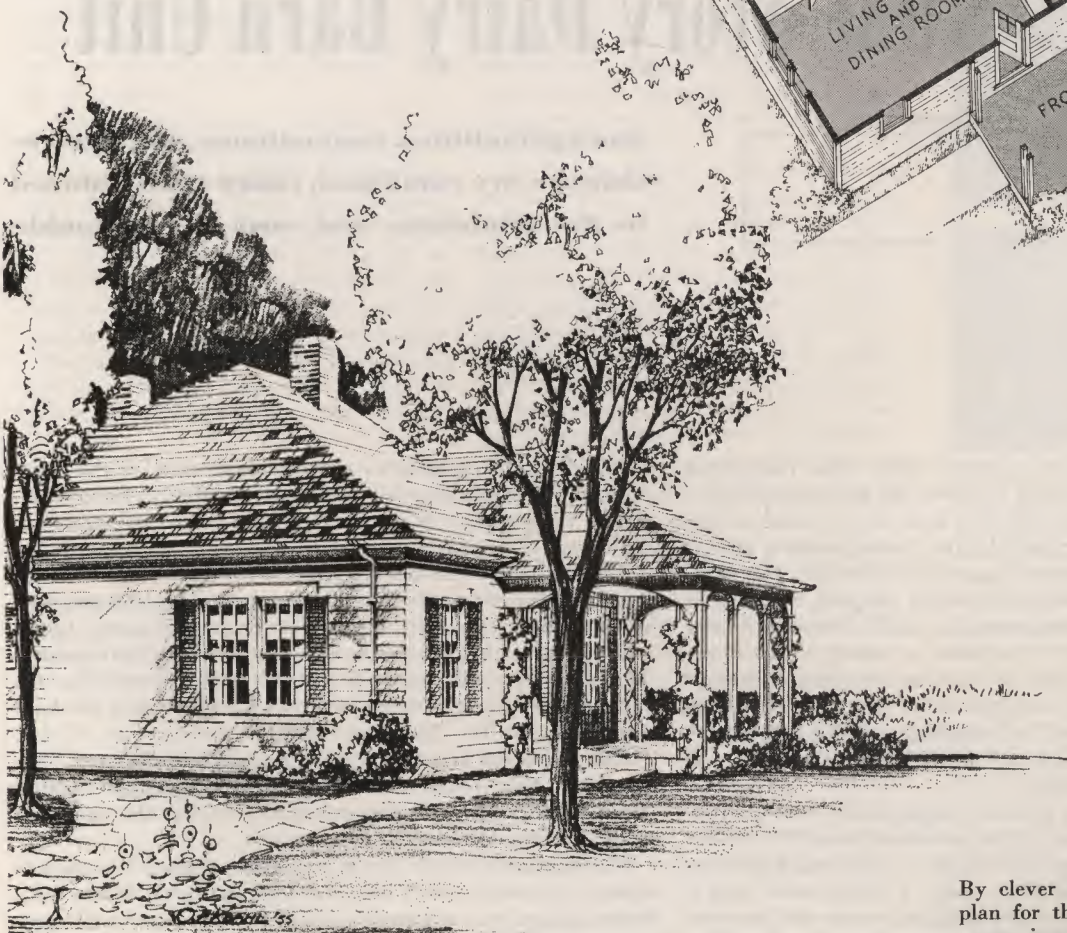
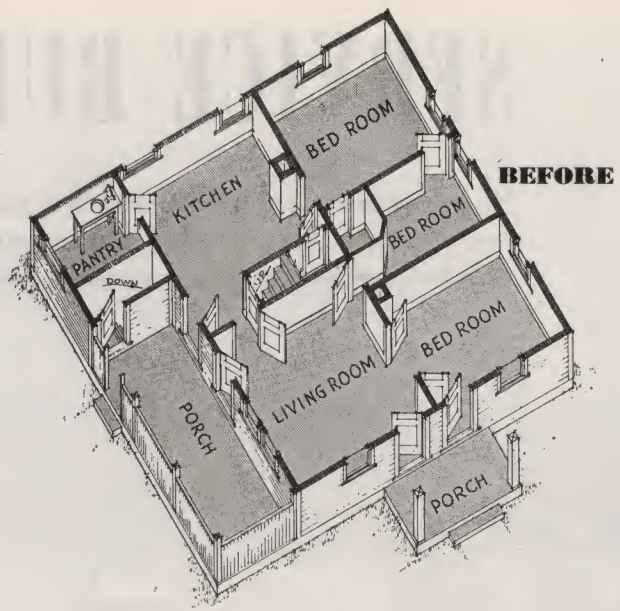
The addition of shutters and two new porches, and the elimination of the ugly dormer from the roof, will transform this bungalow to the up-to-date house at the right

Bungalow

The old plan has no dining-room at all. By eliminating the old side porch, a combination living-room and dining-room is incorporated. This is an ideal arrangement for many farm homes. It is better to have one comfortably-sized room in which family and friends may gather, rather than two poky little rooms, neither of which gets much use.

THE new arrangement includes a well-planned corner kitchen with space for ample working surfaces, stove, and refrigerator, and a table and chairs beneath a window. Either or both of the new porches could be screened and used for summer living-rooms. This small home meets the desires of so many small families in the country that it should be given recognition. A commodious ground floor is strongly recommended for new homemakers or older couples.

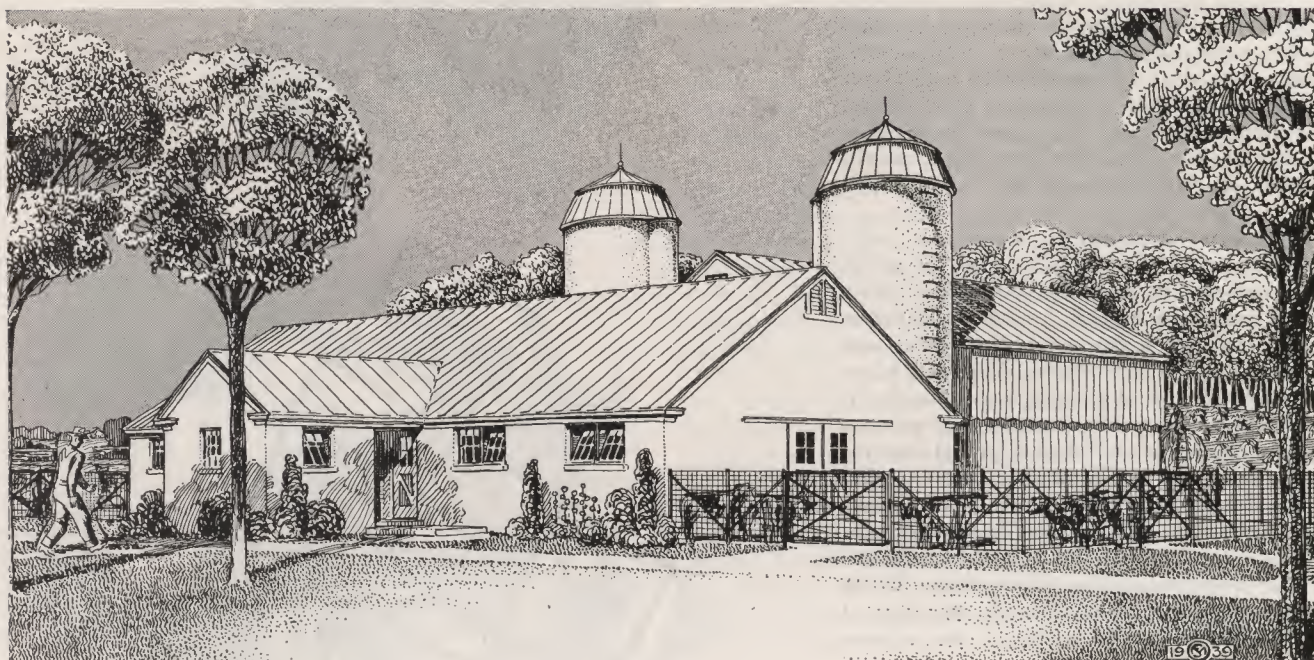
Landscaping can make or break many smaller homes of this type. An interesting contrast is found in the actual photograph on page 28 and the proposed remodeling sketched here. Better corner plantings, vines, and low plantings at porch corners really complete the picture.



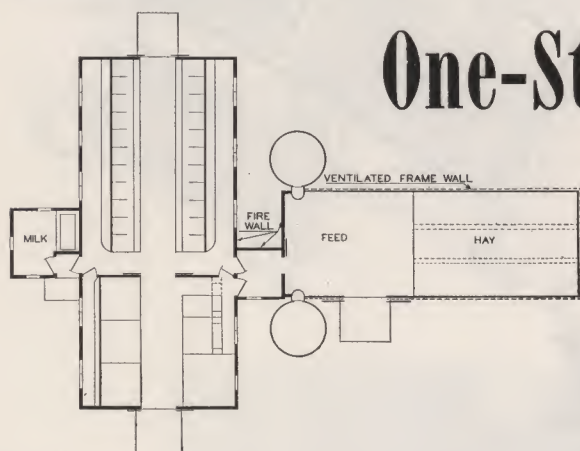
By clever rearrangement, the new plan for the house includes larger rooms, increased closet space, a new bathroom, workroom, and kitchen

SERVICE BUILDINGS

Suggestions in this section are made especially for you by Successful Farming's architects, have all been checked by experience on actual farms



One-Story Dairy Barn Unit



Storage facilities, convenience, and fire-resistance are combined, chore time reduced to the minimum; and cost is reasonable

THE popularity of the one-story dairy barn has spread rapidly. The principal reason has been the fire-resistance possible in such a structure, kept free from large masses of hay and other inflammable material. Wind damage also is greatly reduced when the hay storage is provided elsewhere. The introduction of silo-like haykeepers in which chopped roughage is successfully stored has eliminated the need for extensive mow space for loose hay. Now the practice of storing a part of the legumes and grasses as silage has further concentrated storage space and increased the convenience of supplying roughage to the cows. Furthermore, the increasing use of field balers to collect straw from the combine, or alfalfa from the swath, has reduced storage-space needs.

Unfortunately, there is a lack of organization between livestock and storage facilities in most one-story barns. To remedy this weakness the building is now done as a unit which includes structures for loose hay storage, grain, a silo for corn, and a silo for legumes. A convenient milkhouse may be attached or not, according to the sanitary requirements of the terri-

tory. Such an arrangement reduces chore time to the minimum, provides safe storage, comfortable housing, and good sanitation. Furthermore, it can be built at a price comparable to the common two-story type barn.

The feed- and hay-storage structure is simply an enclosed hay shed, one end of which is used for the storage and preparation of concentrates. Grain bins may be located above. Quite frequently the old barn is remodeled and serves in this capacity. The sides have two offsets to provide ample ventilation for chopped-hay storage. Two ventilated partitions thru the hay-storage section run from floor to plate level.

The milkhouse as shown is equipped with an insulated cooling tank. This would be optional with a commercial cooling cabinet. Before locating the milkhouse, obtain the approval of local milk-inspectors.

This one-story barn is of masonry construction, with a wood-frame roof covered with incombustible material. Thoro insulation against heat in summer and heat losses in winter is provided between the ceiling joists.



The above picture of the barn, taken before painting, shows new addition

“Once in Our Lifetime” Farm architect and owner meet to solve a problem common to many dairymen

“WE’VE just bought the old home farm,” said Martin Ballenbach of Dane County, Wisconsin, after he had introduced himself and taken a chair in the office. “You see,” he continued, “we want to improve our buildings to make them meet up-to-date needs. We will probably be making these improvements only once in our lifetime, so we want to do it right the first time. The cost will have to be low.”

The cost *was* low, and the Ballenbach barn seemed such a satisfactory answer to the remodeling problem so many face that it is worth study. The original barn was a gable-roof structure, 36' x 72', of timber-frame construction with a stone basement. Foundation and frame were in excellent condition and a metal roof had been applied a few years before. The stalls were too narrow and short for the large Holstein cows. Other constructional details added to the inconvenience of chores.

Increased acreage of legume hay meant that more haymow space was needed. Tho the barn roof could have been raised and made into a gambrel, it was discovered that a 36' addition could be made for the same cost. Careful planning and cost estimates showed the best procedure for the conditions on this farm would be to lengthen the barn. The haymow is high, and, with the addition, provided ample space. In order to extend the barn, a bank had to be cut down. While excavating for the basement, an approach was dug to make it possible to drive from one end to the other with a wagon or manure-spreader. Notice in the arrangement of the new barn that the many doors have been filled in with masonry walls and the top parts have

been used for windows. After a machinery shed had been built and equipped to house temporarily the stock not on pasture, the interior of the barn was literally scooped out. Rotten planks, wood posts rotten at the bottom, and worn door-jambes were removed.

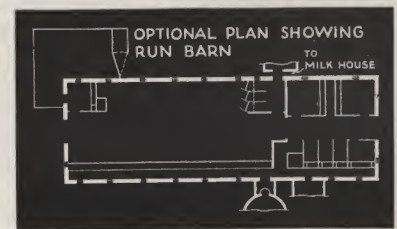
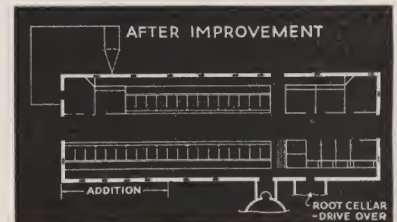
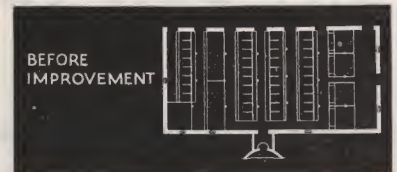
The end wall of the old barn was removed, and the new 16" wall for the addition was built, using strong Portland-cement mortar tempered with lime. Care was taken to secure a substantial footing for the new wall.

The 3 rows of posts thru the center of the barn were removed, and 2 girders with round steel posts sitting on large concrete footings took over the task of supporting the hayloft and barn above. These girders and posts were carefully located so they would not be in the way of stalls, gutters, or pens. Since the original haymow joists were spliced over the haymow beam, new joists had to be placed over the litter alley or center span.

The concrete floor was placed over a well-tamped concrete fill. Clean sand and gravel (6 gallons of water to a sack of cement), careful mixing, thoro tamping, a wood-float finish applied after the concrete had begun to harden, and protection from drying for a week after pouring—all helped to make a smooth but not slippery floor that is durable and dry.

Roof boards and gable-end siding were made from lumber taken from the end of the old barn.

The homemade ventilation system proved quite satisfactory. This consisted of intakes designed to prevent back-draught, and 2 large, insulated outtake flues running from the barn floor up thru the roof. The barn is dry, and the drinking cups do not freeze. Boards and fram-



The floor plans show the barn as it was and after the changes described had been made. An alternative arrangement is the run barn shown, which offers economies in construction. Disadvantages are lower temperature, increased bedding requirements, greater space necessary per cow, greater labor requirements

ing will not rot because of excessive moisture.

Electric wiring was installed, and good lighting has so reduced chore-labor requirements that a hired man is no longer needed here.

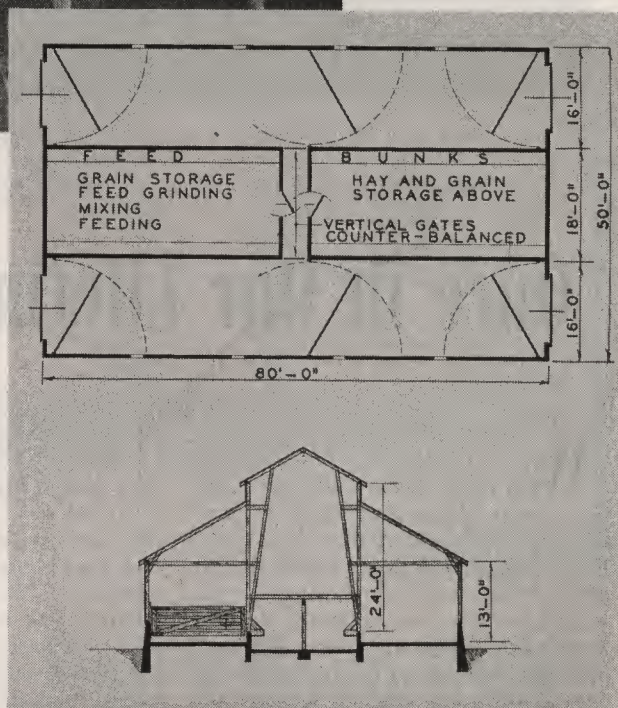
The cost of improvement and enlargement of this barn, not including the water system and drinking cups, was \$1,800.



A Practical Man's

New Beef-Cattle Barn

It has given him a vast amount of satisfaction and service



FOR a quarter of a century Wilbur Witzel had been in the cattle-feeding business on a large scale in northern Iowa. He had traveled extensively, visiting thousands of beef-cattle farms and ranches in a broad area between Chicago and Cheyenne, and was convinced that he knew what would constitute the ideal barn for an area where soybeans and corn are the major crops for fat-cattle feeding. Quite fortunately, his brother, Will, is a thoro, particular carpenter. Between them it seemed certain something would be developed new and well worth watching in the way of a beef barn.

The barn, completed in 1937 at a cost of \$5,000, is 50 feet wide and 80 feet long. With a generous supply of boulders near by, the footings were excavated wide and filled with rock and concrete. All sills were securely bolted to the foundation. After two years of use, no cracks have appeared in walls or floors. A general idea of the framing is given in the cross-section cut on this page. It is strong, well braced, carefully fitted together, and economical. The vertical siding is edge-grain fir car-siding painted with white-lead-and-oil paint. The roof has spaced roof boards covered with red cedar shingles laid $4\frac{1}{2}$ inches to the weather. These shingles are first grade, all heart, all edge grain, all clear, and should give many years of trouble-free service.

The barn runs north and south and has a concrete platform and large water tank to the north with good wind protection from trees, other buildings, and a high board fence. A large concrete hog-feeding platform with a corncrib beside it adjoins the concrete cattle yard. On each end of the barn there

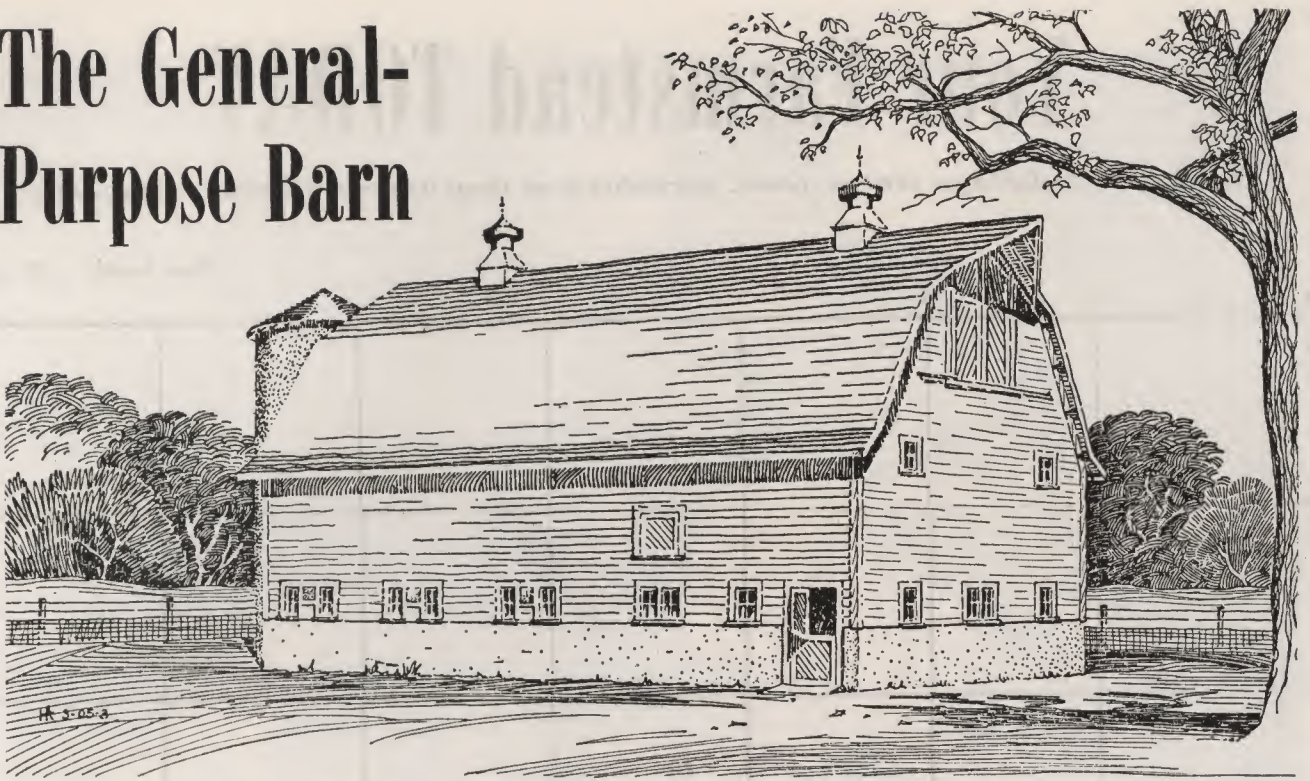
are two 10- by 10-foot rolling doors, while the hay door is on the north end. Just inside the large doors are heavy gates, and at the south end just inside and above the gate is a tight, four-foot section of door which may be rolled across the doorway partially to close out cold south winds but still provide an opening six feet high for steers.

Labor requirements for preparing the feed, feeding, bedding, and handling of cattle have been cut to a minimum with this barn. A good straw pile in the south yard and a good wind-break provide an ideal place for the cattle. They are contented and put on good gains. With this barn, silage is fed in feed bunks out in the yard. At present, silage must be hauled, but this is a temporary arrangement.

EXPERIENCE with this barn has proved its merit. In the winter of 1938-39, one hundred forty head of cattle were fed in it. At present there are 100 head of fattening cattle and 150 hogs in it. The owner places the capacity of the barn at 150 cattle and 200 hogs. In addition to this there is storage room for 60 tons of hay, 1,000 to 1,500 bushels of grain and a mixing and grinding room.

Construction blueprints and detailed floor plans for this new beef feeders' barn may be obtained by writing the Service Building Editor, *Successful Farming*, 9335 Meredith Building, Des Moines, Iowa, and enclosing 25 cents in either coin or stamps to cover printing and mailing costs. In your request, be sure to specify "New Beef-Cattle Barn."

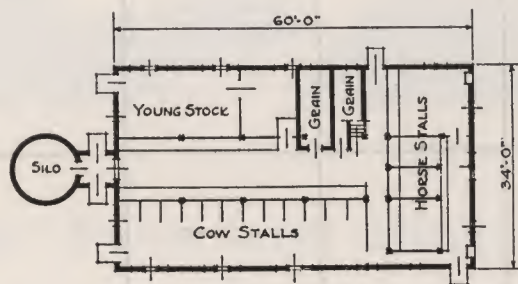
The General-Purpose Barn



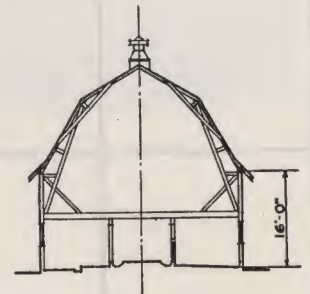
This barn is equipped for dairy cattle but is quite flexible for change to beef, sheep, or horses

Plan carefully and keep in mind the need for flexibility in this type of building

SCALE 0 10 20 30 FEET



FLOOR PLAN



SECTION

THE two-story barn of rectangular shape is a product of many years' experience. While subject to some definite shortcomings, it has an advantage in labor-saving and economy that is likely to last.

Because it will stand for perhaps three or four generations, the location of the barn is an exceedingly important factor. Natural drainage is usually a first consideration. Unless the water drains naturally away from it in all directions, some artificial provision is necessary. For drainage within the barn, the concrete floor is elevated enough so that it is well above the ground level at all entrances.

In northern regions a location which permits the construction of a basement barn is often used to provide protection from extreme cold on one side at least.

The barn presented here has been a popular one thruout the country for generations.

Its size, of course, is determined by the number of animals to be housed. Where one row of animals of average size is placed lengthwise in the barn, it occupies, with mangers, curbs, platforms, gutters, and feed alleys just 17 feet, or half of a barn 34 feet wide. Unless rigid economy is necessary, it is advisable to make the width of the barn 36 feet. This provides better opportunity for the use of feed trucks in the alleys. The size and number of animals determines the length of the barn. A general rule is to allow a stanchion width of 3' 4" for each cow. If they are large, it is better to allow 3' 6" per cow. Platform lengths under the cows should vary slightly to accom-

modate heifers and more mature animals. For Jerseys, platform length should be between 4' 4" and 4' 7"; for Ayrshires and Guernseys, 4' 6" to 4' 10"; for Holsteins, 4' 10" to 5' 6". A crowded barn is always a nuisance, but an over-large barn is unnecessarily expensive, and heat loss may be so great it cannot be kept warm in cold weather. Animal heat units are the deciding factors.

Economy of space is obtained and labor reduced when cows are arranged in rows lengthwise of the barn, with pens for calves and bulls and maternity stalls at one end.

A recent development which adds flexibility to the barn consists of partitioning off a small section to be used for milking purposes, leaving the rest for a loafing shed. Thus, for 20 cows, milking space would be provided for only 4 at a time. The balance of the barn would be kept well bedded and the cows turned loose in it. Hay and silage are usually fed in bunks in the loafing shed.

RAPIDLY changing conditions in agriculture have produced a demand for interior arrangements of barns that are flexible. If a farm changes hands, the new operator may wish to change from beef cattle to sheep, or possibly to dairy cattle.

The barn presented here is now equipped for dairy cattle, but is quite flexible.

SERVICE BUILDINGS- Continued on Page 48

Your Farmstead TODAY

Locate the buildings, fences, trees, shrubbery as they appear on your farm today.

One inch = 50 feet

	25	50	100				
25							
50							
100							

ONCE you have roughed in the present location of your home, service buildings and areas, plantings, garden space, and farmstead fences and gates, using the handy, scaled paper above, dozens of the improvements and rearrangements you have wanted will suggest themselves and present solutions to your problems. They have seemed remote and perhaps difficult because it is the habit of any one of us pretty much to take things as they are; we often fail to see the forest for the trees.

This charting of the farmstead will be an eye-opener, and it will be fun to do. After your farmstead today is on paper, you'll want to check and note in the following lists the things you hope to do to make your dreams of a near-perfect farm home and plant come true. Don't become discouraged if your final lists seem long. Remember: such improvements come with the years. Planning will make them possible, and the following Inventory pages make planning easy.



Your Farm and Home BUILDING INVENTORY

ON OUR old home farm there was a clear, sparkling spring behind the barn. For several years we carried every gallon of water used in our home thru a muddy barnyard, around the barn to the house. Such a trip for a pail of water was no picnic after a long hard day in the field, and I fear that many times Mother made the trip herself.

Eventually we got around to building a new curb for the spring, bought a few hundred feet of pipe, and brought the water to the kitchen door, where we built a spring house. Why we did not pipe the water directly into the house I cannot explain. We appreciated the convenience and continued to carry water 30 or 40 feet to the house for years afterward, altho a little ingenuity would have put it in the kitchen sink. We considered ourselves hard-worked farmers, and I believe we did as much as the average. Unfortunately, there was a lot of our work which was quite unnecessary.

There are thousands of farms today on which needless steps are taken daily. Farmsteads need to be straightlined just as certainly as an automobile factory. Nor dare we forget Mother's kitchen, in which she must prepare three square meals per day for a hungry family. With a cupboard in one corner, the stove in another, and her work table in perhaps another, she takes millions of unnecessary steps. Kitchens must be straightlined, too.

One's daily round of work becomes so definitely a habit that

it is exceedingly difficult to recognize the unnecessary steps, and we continue to do chores in a barn so badly arranged it is necessary to go around the building a dozen times in an evening. Only by taking the time methodically to go over each building with an eye to the path we must follow in doing our chores will we discover the lost motion.

This will be a perfect opportunity also to take a complete inventory of the condition of every farm building. With a pencil and notebook carefully examine foundation, side walls, framing, and roof. As carefully estimate the cost to bring these essential parts into first-class condition and at the same time arrange the buildings for greater usefulness and convenience. Your totals are likely to be large ones. Figures will not make the situation any better or worse, except that you use them as the basis for an annual building repair budget which, in my opinion, is the only means of attaining and maintaining an ideal farmstead.

As your work of evaluation progresses, you will become more and more interested, and if you have never had a mental picture of what you want in buildings, you are likely to find one in this experience. Then, thru a regular system of making annual repairs, the farmstead of your dreams will be maintained—like a good bank account. If you have an average set of farm buildings, I recommend courage in facing the facts, and wish you happiness in your final achievement.—*Kirk Fox*

HOUSE

Year built? _____

Type of House: Frame _____ Brick _____ Concrete _____ Stone _____ Other _____
 One story _____ More than one story _____

IMPROVEMENTS NEEDED

		Within 12 Months	Within 5 Years	Estimated Cost
FOUNDATION	. Repair	_____	_____	_____
	. Build new	_____	_____	_____
	. _____	_____	_____	_____
	. _____	_____	_____	_____
BASEMENT	. Dig new	_____	_____	_____
	. Enlarge	_____	_____	_____
	. Fruit- and vegetable- storage	_____	_____	_____
	. New floors and walls	_____	_____	_____
	. Repair or build stairs	_____	_____	_____
	. _____	_____	_____	_____
CHIMNEYS	. Repair	_____	_____	_____
	. New	_____	_____	_____
	. _____	_____	_____	_____
	. _____	_____	_____	_____
FLOORS	. Repair	_____	_____	_____
	. Lay new	_____	_____	_____
	. _____	_____	_____	_____
	. _____	_____	_____	_____
INSIDE WALLS AND WOODWORK	. Repair	_____	_____	_____
	. New	_____	_____	_____
	. Refinish	_____	_____	_____
	. _____	_____	_____	_____
	. _____	_____	_____	_____
	. _____	_____	_____	_____

		IMPROVEMENTS NEEDED		
		Within 12 Months	Within 5 Years	Estimated Cost
DOORS AND WINDOWS	. Repair	_____	_____	_____
	. New	_____	_____	_____
	. _____	_____	_____	_____
	. _____	_____	_____	_____
OUTSIDE WALLS	. Repair	_____	_____	_____
	. New	_____	_____	_____
	. Paint	_____	_____	_____
	. _____	_____	_____	_____
INSULATION	. Attic floor	_____	_____	_____
	. Attic ceiling or roof	_____	_____	_____
	. Side walls	_____	_____	_____
	. _____	_____	_____	_____
ROOFING	. Repair	_____	_____	_____
	. New	_____	_____	_____
	. _____	_____	_____	_____
	. _____	_____	_____	_____
PARTITIONS	. Move to improve floor plan	_____	_____	_____
	. Build new	_____	_____	_____
	. Remove	_____	_____	_____
	. _____	_____	_____	_____
NEW ADDITIONS	. Bedroom	_____	_____	_____
	. Living-room	_____	_____	_____
	. Dining-room	_____	_____	_____
	. Kitchen	_____	_____	_____
	. Workroom	_____	_____	_____
	. Bathroom	_____	_____	_____
	. Front or side porch	_____	_____	_____
	. Back porch	_____	_____	_____
	. _____	_____	_____	_____
	. _____	_____	_____	_____

DAIRY BARN

Year built?_____

Type of construction: Frame____Brick____Hollow Tile____Other_____

IMPROVEMENTS NEEDED

	Within 12 Months	Within 5 Years	Estimated Cost
. Repair or rebuild foundation	_____	_____	_____
. Strengthen structural framework	_____	_____	_____
. Re-roof	_____	_____	_____
. Insulate	_____	_____	_____
. Line interior	_____	_____	_____
. Lay new floor	_____	_____	_____
. Paint	_____	_____	_____
. Electrical wiring	_____	_____	_____
. _____	_____	_____	_____
. _____	_____	_____	_____

Will you need a new dairy barn within the next year?_____
Within the next five years?_____

Yes or No
Yes or No

MILKHOUSE

Year built?_____

Type of construction: Frame____Brick____Hollow Tile____Other_____

IMPROVEMENTS NEEDED

	Within 12 Months	Within 5 Years	Estimated Cost
. Repair or rebuild foundation	_____	_____	_____
. Strengthen structural framework	_____	_____	_____
. Re-roof	_____	_____	_____
. Insulate	_____	_____	_____
. Line interior	_____	_____	_____
. Lay new floor	_____	_____	_____
. Paint	_____	_____	_____
. Electrical wiring	_____	_____	_____
. _____	_____	_____	_____
. _____	_____	_____	_____

Will you need a new milk house within the next year?_____
Within the next five years?_____

Yes or No
Yes or No

BEEF BARN

Year built?_____

Type of construction: Frame___Brick___Hollow Tile___Other_____

IMPROVEMENTS NEEDED

	Within 12 Months	Within 5 Years	Estimated Cost
. Repair or rebuild foundation	_____	_____	_____
. Strengthen structural framework	_____	_____	_____
. Re-roof	_____	_____	_____
. Insulate	_____	_____	_____
. Line interior	_____	_____	_____
. Lay new floor	_____	_____	_____
. Paint	_____	_____	_____
. Electrical wiring	_____	_____	_____
. _____	_____	_____	_____
. _____	_____	_____	_____
. _____	_____	_____	_____
. _____	_____	_____	_____

Will you need a new beef barn within the next year?_____ Within the next
five years?_____ Yes or No
Yes or No

For additional notes:

CENTRAL HOG HOUSE

Year built?_____

Type of construction: Frame____ Brick ____ Hollow Tile ____ Other _____

IMPROVEMENTS NEEDED

	Within 12 Months	Within 5 Years	Estimated Cost
. Repair or rebuild foundation	_____	_____	_____
. Strengthen structural framework	_____	_____	_____
. Re-roof	_____	_____	_____
. Insulate	_____	_____	_____
. Line interior	_____	_____	_____
. Lay new floor	_____	_____	_____
. Paint	_____	_____	_____
. Electrical Wiring	_____	_____	_____
. _____	_____	_____	_____
. _____	_____	_____	_____
. _____	_____	_____	_____
. _____	_____	_____	_____

Will you need a new central hog house within the next year?_____ Within
the next five years?_____ Yes or No
Yes or No

For additional notes:

Year built?_____

Type of construction: Frame___Brick___Hollow Tile___Other _____

Within 12 Months	Within 5 Years	Estimated Cost
---------------------	-------------------	-------------------

- | | | | |
|-----------------------------------|-------|-------|-------|
| . Repair or rebuild foundation | _____ | _____ | _____ |
| . Strengthen structural framework | _____ | _____ | _____ |
| . Re-roof | _____ | _____ | _____ |
| . Insulate | _____ | _____ | _____ |
| . Line interior | _____ | _____ | _____ |
| . Lay new floor | _____ | _____ | _____ |
| . Paint | _____ | _____ | _____ |
| . Electrical wiring | _____ | _____ | _____ |
| . _____ | _____ | _____ | _____ |
| . _____ | _____ | _____ | _____ |
| . _____ | _____ | _____ | _____ |
| . _____ | _____ | _____ | _____ |

Will you need a new poultry house within the next year?_____ Within the
next five years?_____ Yes or No
Yes or No

For additional notes:

MACHINE SHED

Year built? _____

Type of construction: Frame _____ Brick _____ Hollow Tile _____ Other _____

IMPROVEMENTS NEEDED

	Within 12 Months	Within 5 Years	Estimated Cost
. Repair or rebuild foundation	_____	_____	_____
. Strengthen structural framework	_____	_____	_____
. Re-roof	_____	_____	_____
. Lay new floor	_____	_____	_____
. Paint	_____	_____	_____
. Electrical wiring	_____	_____	_____
. _____	_____	_____	_____
. _____	_____	_____	_____
. _____	_____	_____	_____

Will you need a new machine shed within the next year? _____ Within the
next five years? _____
Yes or No Yes or No

CORNCRIB

Year built? _____

Type of construction: Frame _____ Brick _____ Hollow Tile _____ Other _____

IMPROVEMENTS NEEDED

	Within 12 Months	Within 5 Years	Estimated Cost
. Repair or rebuild foundation	_____	_____	_____
. Strengthen structural framework	_____	_____	_____
. Re-roof	_____	_____	_____
. Lay new floor	_____	_____	_____
. Paint	_____	_____	_____
. _____	_____	_____	_____
. _____	_____	_____	_____

Will you need a new corncrib within the next year? _____ Within the next
five years? _____
Yes or No Yes or No

GRANARY

Year built?_____

Type of construction: Frame____Brick____Hollow Tile____Other_____

IMPROVEMENTS NEEDED

	Within 12 Months	Within 5 Years	Estimated Cost
. Repair or rebuild foundation	_____	_____	_____
. Strengthen structural framework	_____	_____	_____
. Re-roof	_____	_____	_____
. Lay new floor	_____	_____	_____
. Paint	_____	_____	_____
. _____	_____	_____	_____
. _____	_____	_____	_____
. _____	_____	_____	_____

Will you need a new granary within the next year?_____

Within the next

five years?_____

Yes or No

Yes or No

GARAGE

Year built?_____

Type of construction: Frame____Brick____Hollow Tile____Other_____

IMPROVEMENTS NEEDED

	Within 12 Months	Within 5 Years	Estimated Cost
. Repair or rebuild foundation	_____	_____	_____
. Strengthen structural framework	_____	_____	_____
. Re-roof	_____	_____	_____
. Lay new floor	_____	_____	_____
. Paint	_____	_____	_____
. _____	_____	_____	_____
. _____	_____	_____	_____
. _____	_____	_____	_____

Will you need a new garage within the next year?_____

Within the next

five years?_____

Yes or No

Yes or No

FENCING

NUMBER OF RODS NEEDED

Type of Fence	Within 12 Months	Within 5 Years	Estimated Cost
. Woven wire	_____	_____	_____
. Barbed wire	_____	_____	_____
. Electric	_____	_____	_____
. _____	_____	_____	_____
. _____	_____	_____	_____

Number of steel posts to be bought in next 12 months?_____ In next five years?
Number

Approximate number

Number of wood posts to be bought in next 12 months?_____ In next five years?
Number

Approximate number

WATER SUPPLY

IMPROVEMENTS NEEDED

	Within 12 Months	Within 5 Years	Estimated Cost
. Dig new well	_____	_____	_____
. Deepen old well	_____	_____	_____
. Recase old well	_____	_____	_____
. Install sanitary curb top on well	_____	_____	_____
. Water in barns and feedlots	_____	_____	_____
. Install elevated storage tank	_____	_____	_____
. Install pressure pump	_____	_____	_____
. _____	_____	_____	_____
. _____	_____	_____	_____
. _____	_____	_____	_____
. _____	_____	_____	_____

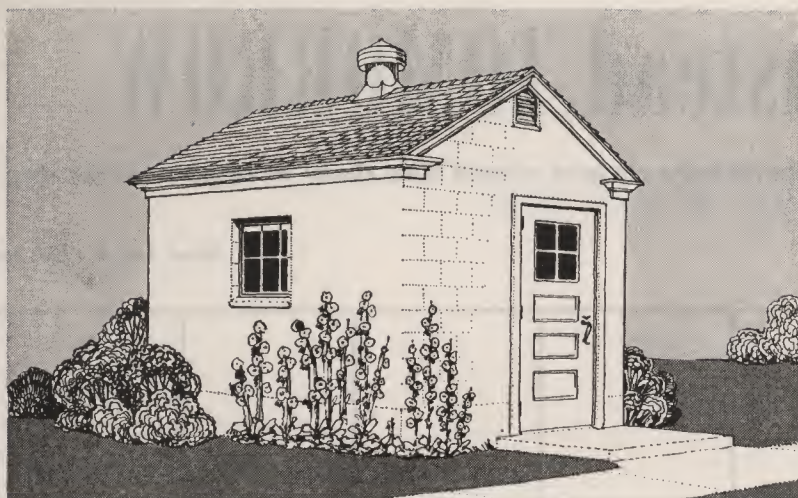
Your Farmstead TOMORROW

Locate buildings, fences, trees, shrubbery as you would like them to appear some day.

One inch=50 feet

Now you have before you a plan of your farmstead as it is and you have noted in the inventory pages your present equipment and the improvements you expect to make over the short and the long haul. Using this material, it will be an exciting adventure to plot your future farmstead—a future filled with increased comfort, convenience, and profit for you and your family as partners in one of the finest ventures in the world for anyone—American FARM LIVING.

We have but one suggestion (after all, you are the judge of what will best fill your bill): allow ample space between buildings to reduce fire hazard and lay them out, if possible, on a plane at right angles to the prevailing winds so that dust, noise, and objectionable odors from service buildings will be minimized. We'd like to see the plans as you finish them, and the editors will furnish additional scale pages and inventories. We wish you good luck with Your Farmstead Tomorrow!



Attractive as well as practical

A New Milkhouse

Designed especially for Successful Farming readers who are marketing milk or cream from a medium-sized herd

WITH careful planning and an eye for beauty in even the simplest of farm structures, Architect Witzel has produced an exceptionally practical and attractive milkhouse. While it is designed especially for the medium-sized dairy farm which markets either whole milk or cream, its 10' x 12' construction can be altered easily for larger dairies or where a 2-room milkhouse is required by local ordinance.

The foundation and floor should have good-quality concrete. For a dense, hard floor that is not too slippery, finish with a wood float. Where a considerable amount of milk is handled in heavy cans, it is often necessary to set into the cement a special steel mesh to prevent undue wearing.

Masonry units of lightweight concrete, clay tile, stone, and brick, are among the wall materials which may be used. In northern areas, a wall of good insulation qualities is necessary; lightweight concrete blocks with air spaces filled with insulation are being used successfully in many colder areas.

Metal window frames are desirable, and tight-fitting screens for summer use should be built. It is preferable to have the screen door open in and the main door open out.

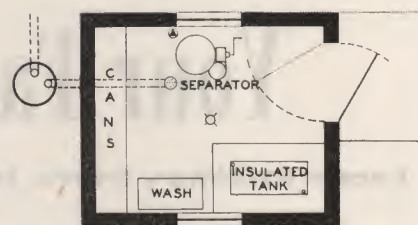
A wood-frame roof is economical and practical, and, if desired, it may be covered with incombustible roofing. Ventila-

tion thru the attic will keep the house cool in the summer. A regulation screened ventilator with 100 square inches of out-take area is required to remove odors and steam from near the ceiling of the room below.

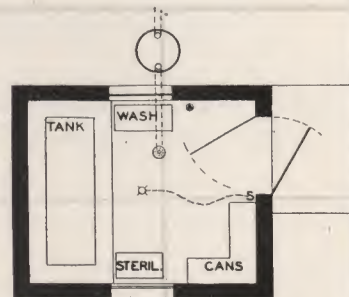
Should you buy an electric cooling unit complete with tank, or construct an insulated concrete tank, it is important in either case to place it so as to provide easy access. With a metal cooling tank, rusting may take place rapidly if it is set into the floor. The life of any tank will be lengthened materially if cans are handled with a block and tackle. A common sliding door track, 6' to 8' long, attached to the ceiling of the milkhouse, and a ball-bearing door-hanger will serve very well. Cans may be raised and lowered with a common barbed-wire stretcher suspended from the door-hanger.

Insulated cooling tanks are practical and should be used where milk is to be cooled with cold water. When such tanks are used for cooling with ice or refrigeration coils, they must be a standard width of 40". For cold-water cooling of milk, tanks may be narrower to save water, but they still need insulation for best results. Milk once cooled in an insulated tank will remain cool, and in cold weather will not freeze.

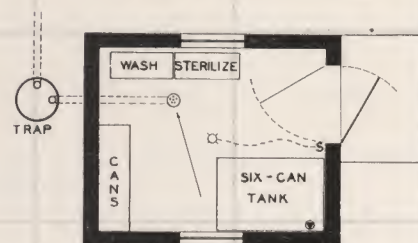
Locate your milkhouse on a well-drained site on the clean side of the barn;



Floor plan for cream-separating



Floor plan for electric cooling



Floor plan for water cooling

surround it with a lawn, shrubs, and flowers; and service it with a concrete or gravel walk and drive. In some fluid-milk territories, all milk must be strained in the milkhouse, so by placing it close to the barn and convenient to an outside door, travel can be reduced to a minimum. However, there should be no direct connection from the barn to the milkhouse unless the state permits it.

On farms passed by major highways, a more elaborate milkhouse may prove to be a good investment. The advertising value of an attractive place for the display of dairy products has been fully demonstrated. City people enjoy getting out in the country, and if the farmer makes it convenient for them to stop, it is possible to build an attractive trade of this class. Before putting additional money into the more elaborate house, a careful check on highway traffic should be made, and, if possible, a study of farms where some degree of success in this method of selling has been achieved.

● Construction blueprints and detailed floor plans for the Successful Farming milkhouse may be obtained by writing the Buildings Editor, 9335 Meredith Building, Des Moines, Iowa, and enclosing 25 cents in either coin or stamps to cover printing and mailing costs. Be sure to specify Successful Farming's New Milkhouse blueprints.



The arrangement of this pen and strong pipe-rails, securely set, will minimize danger to the attendant

Your life is worth A Good Bull Pen

THE herd sire given the freedom of a suitable bull pen is a better animal than he can ever be when closely confined by either stall or halter and ring. The opportunity for exercise and a degree of freedom account for this. Furthermore, a proper bull pen affords safety and control over the bull that can be obtained in no other way.

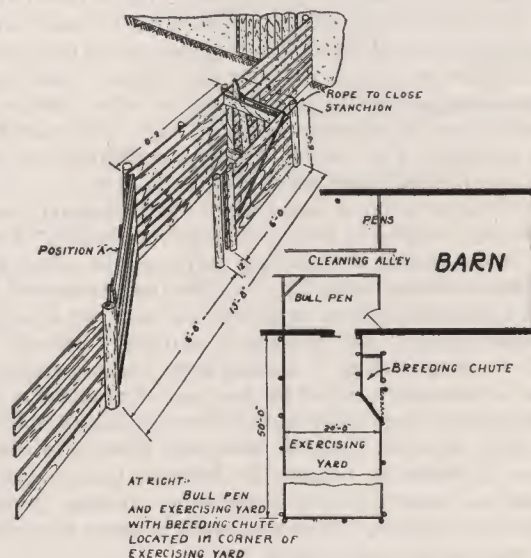
Illustrated is a particularly good job, one in which discarded 2" locomotive flues form the rails, securely set in posts. The illustration tells the story of construction better than words.

Naturally the bull pen or paddock will have to be placed on your own place according to the arrangement of buildings you have. However, to be right the pen must adjoin the shelter provided for the bull. Doors between shelter and pen must be controllable from outside so the animal may be shut in or out of the stable without handling him.

Equally important is size and shape. Give the bull a pen long and narrow, 20' x 80', and the bull will get exercise, whereas in an equal area in a square the bull will stand in the center and exercise very little.

Steel pipes or boiler flues set in reinforced concrete posts make an enclosure both safe and good-looking. If pipe is run thru the reinforced concrete posts, posts should be 10" to 12" thru, depending on size of pipe used. If pipes are held by clamps or U bolts, 8" posts are large enough. Fence should be 5½' high. Posts should be set in ground to a depth adequate for full security, not less than 2½' for concrete. Wood posts may be used. They should be not less than 5" in diameter at the top, set at least 3' in the ground. All parts are best set in concrete. Distance between posts should not exceed 8'. If plank-and-post construction is used, bolt or spike to the posts 2' x 6' planks spaced 5½" apart, bottom plank 6" from the ground. Hardwood poles 4" in diameter may be hewn at ends, spiked home on posts with spacing 4" apart. If woven wire is used it should be 5' fence with stays spaced 6", one barbed wire on top.

In conjunction with the bull pen should be a safety breeding stall. This should be 4' wide, 9' long, inside dimensions. If a



breeding crate is to be used within the stall, increase width by 6" to 9". Build the breeding stall so that it is alongside the fence where a gate may be swung across the rear of the breeding stall, flutter-valve style. Animal to be bred is simply placed in the breeding stall or chute, and with entire safety to caretaker, bull is admitted to the breeding stall. After service, attendant can work the bull back from the outside, secure the gate against the bull, and lead out the cow.

Points to be considered when locating the pen: well-drained ground located where bull can see the herd; shade; a stout keg or barrel for the bull to play with; tanbark on the ground if possible; a location where a good animal in a good pen is a worthy advertisement of the herd.



Concrete floors and modern disinfectants have made the central hog house popular for early litters of strong pigs

Hog Houses

A choice of two systems representing widely different problems is offered

SUCCESSFUL swine-raisers fall generally into two groups on the subject of housing. The first, and by far the most numerous, now depends upon a battery of small colony houses which permits the sows and their litters to spend most of the summer in the fields away from parasites and disease. These small colony houses are readily pulled up to the other buildings to simplify chores in cold weather and to enjoy protection from large buildings. The system, developed in Illinois, has been known as the McLean County Sanitation Plan.

The second group of swine-raisers depends upon central hog houses, frequently heated to permit the raising of very early litters, usually for breeding purposes. For a long time in disfavor because of sanitation difficulties, the central hog house is now coming back again thru the discovery of simpler cleanup methods and because it materially reduces the work of caring for hogs. A leading Iowa hog-raiser who has made a remarkable record for low cost of production does not permit his hogs away from the central house from the time they are born. Concrete floors and pens make a strict system of sanitation simpler, he believes, than where his animals are scattered over considerable territory. Modern disinfectant applied with power sprayers copes successfully with both disease and parasites.

In planning your farmstead, you are therefore free to a choice between the two systems. The central house represents a very heavy investment, but when built correctly its annual cost may fall reasonably close to the less expensive and shorter-lived structures.

When the choice falls on the community house, much more care in planning and construction, as well as in selection of materials, is necessary. Locate the house away from other buildings and prevailing winds to avoid objectionable odors. Nearness to cribs, pastures, and feeding yards must be considered, however. Natural drainage is more important than it sounds because a house located in a wet spot always proves unsatisfactory.

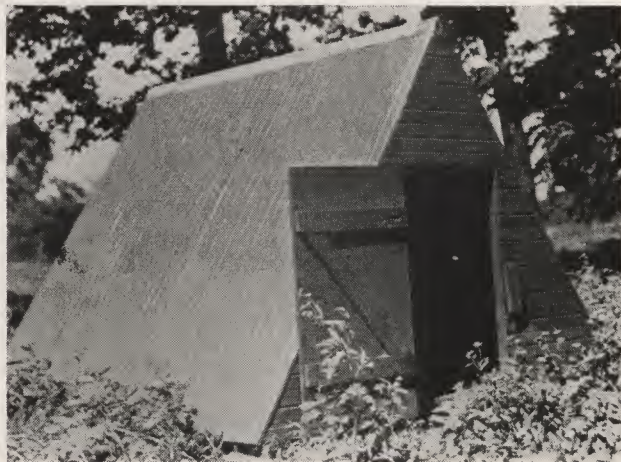
A house of this type is best built to accommodate 2 rows of pens, with an alley between. The average pen is 8' long and the alley 4' or 8' wide. The usual width of the house will

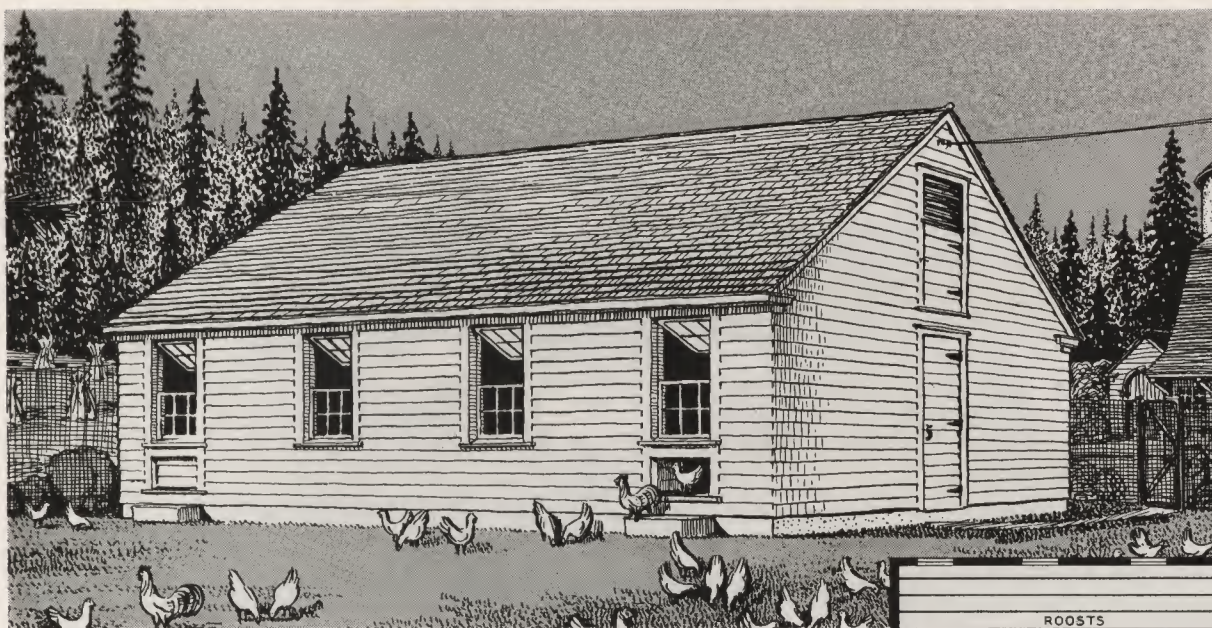
vary from 20' to 26'. In the wider house where the alleyway is also used as a driveway, it is possible to convert the otherwise wasted space into a feeding floor or temporary farrowing pens. The length of the house depends entirely upon the number of hogs. Ordinarily a feed- and storeroom are wanted. Thus the common length ranges from 30' to 60', with 8 to 20 farrowing pens. The most widely used pen is 6' x 8'.

The foundation should extend to firm soil below frost line, if possible. The best floors are made of 4" of concrete, or of a 4" layer of hollow tile covered with $\frac{3}{4}$ " of concrete.



Above: A portable colony house which, when insulated and placed to catch sunlight thru upper door and window, should prove practical. Below: the old McLean favorite. Crude oil or used crankcase oil mixed with red ochre paints protect it





A New Laying House

**Designed especially for our
Successful Farming readers**

GOOD poultry housing need not be expensive; the plans shown here provide satisfactory housing at low cost, and cost may be further reduced by using local materials and farm labor in construction. The plans may also be used as a guide in remodeling old barns, sheds, granaries, and other unused buildings into good single- or multiple-story laying houses.

The 20' x 20' house (Plan 1) has a capacity of 100 birds of the heavy breeds and up to 150 of the light breeds. The 26' x 30' house (Plan 2) has a capacity of 200 birds of the heavy breeds and up to 300 of the light breeds. Either house may be lengthened, and the 26' house may be raised for additional stories if future expansion makes this necessary.

A brief description is given here to cover some of the points that could not be shown in the cuts on this page: The foundation is 8" wide, extends from 12" above grade to below frost level. Anchor bolts are used for protection against windstorm damage. The floor construction used is concrete on a 5" sand or gravel fill. In climates with cold winters a dry floor is most desirable, and this is obtained by ventilation at all times and by waterproofing the floor. The floor is easily waterproofed by placing enough

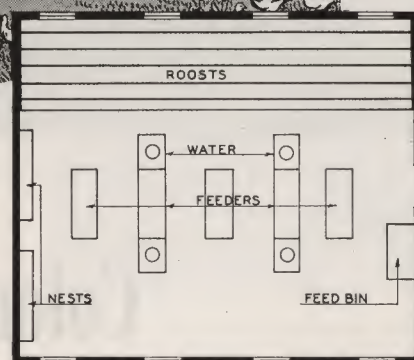
concrete over the gravel so it can be leveled off. After this subfloor has hardened, a layer of melted road asphalt or a layer of 2-ply roofing paper, with joints lapped and sealed, is applied. Three inches of concrete over the waterproofing is struck off with a straight-edge and finished with a wood float.

ATHOROLY insulated wall is an important feature. Drop siding is applied directly to the studding, either with or without building paper under it.

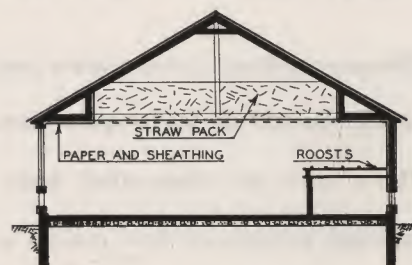
The inside of the house is lined with shiplap, matched boards, galvanized sheet iron, or insulation board covered with plaster. This lining is placed over waterproof paper in the colder climates. Such a moisture barrier, or vaporproof paper, prevents the moisture on the warm interior from condensing in the fill insulation of shavings or similar material.

The straw loft provides an inexpensive method of ventilation as well as effective ceiling insulation. Fresh air enters thru the windows, and the warm, moist air works up thru the straw pack.

IF FOR any reason one should wish to install a ventilation system other than the straw loft, this can be done. In this case be sure to insulate the ceiling with



Plan 2 (26' x 30'), showing equipment



A cross section of either Plan 1 or Plan 2

4" to 8" of good fill insulation thruout.

Cleanliness in the poultry house must be your watchword if you are to prevent those costly outbreaks of disease and parasites common to poultry. Its achievement will be simple if house, fixtures, and appliances are built with ease of cleaning and disinfection constantly in mind. Movable equipment makes a more thorough cleanup possible. With so many practical, inexpensive devices on the market today, the poultryman should have no difficulty in making a choice.

While these plans have been prepared for the climates having cold winter weather, they may be adapted to warmer climates by providing more window- or screened openings.

● Blueprints and lists of materials may be had for either Plan 1 or Plan 2 by writing Service Building Editor, Meredith Publishing Company, Des Moines, Iowa, and enclosing 25 cents to cover printing and mailing costs. Be sure to ask for "Successful Farming's New Laying House" and specify either Plan 1 or 2 on your order.



Where range can be changed from season to season, colony houses in batteries are highly desirable

Colony Poultry Houses

These modest structures may be bought ready-made or built quite easily at home. They are an essential part of a chick-raising program for today's poultrymen

COLONY poultry houses dot the landscape wherever poultry makes up a considerable part of the farm income. Thru their distribution in the fields, away from worms and diseases, it is possible to produce far more efficiently. However, the additional work involved limits use of the colony house largely to young growing birds more susceptible to parasites and infection than older ones.

Two kinds of colony houses are available to the poultry-raiser today. He may buy ready-made, factory-constructed houses in sections, which are readily assembled on the farm without skilled labor. Foundations may be permanent or not, depending upon circumstances. For the renter, the assembled house is especially attractive because it is convenient to move after a few bolts have been withdrawn. Sections are plainly marked for convenience in assembling and are thoroughly painted. Materials ranging thru wood in various forms, composition material, and steel are available. In most cases these houses are so arranged that sections may be added to increase the size of the house as much as necessary.

The homemade house need not be a great strain on the mechanical ability of the poultryman. The one shown at the right is 12' x 16' and will hold from 400 to 600 White Leghorn chicks. Sun parlors attached to each house give the chicks an opportunity to exercise while absorbing the full benefit of the sun's rays, even tho the weather is nippy. The floor of the parlor is made of heavy mesh wire so that droppings immediately fall below reach of the chicks.

When the runners on which these houses are usually con-

structed have been heavily creosoted and the houses given reasonable care, they last for many years.

Styles are almost limitless, making available almost any shape or type that may meet local conditions most satisfactorily. The necessity of reducing overhead space as much as possible must not be overlooked. It is wasteful of material and makes the house expensive to heat. Insulation in these houses is essential to satisfactory and economical service.

The newest development in the line of a low-cost colony house is a round-roof, laminated-rafter building, 24' x 24', designed at Michigan Agricultural College for a laying house. The cost ranges from \$160 to \$175 for materials, including hardware and fittings. Its capacity is 150 to 175 birds. It is mounted on 4" x 4" runners and is built of insulation board or plywood nailed directly to laminated, curved rafters.

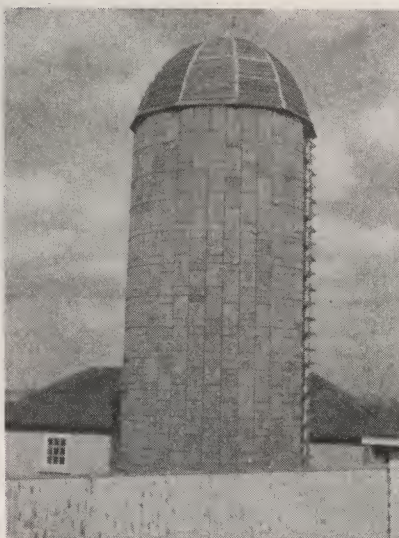
This house has a wind-shielded sun parlor for very new chicks



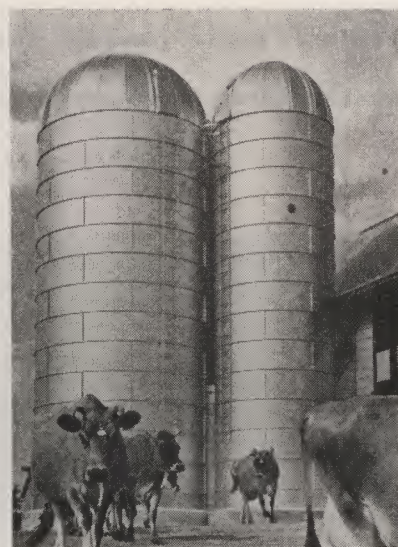
Silos . . . for storing great quantities of high-quality feed, they have no equals



Closeup of a new concrete-stave silo



A large, strong, clay-stave type silo



Steel is handsome—and fire-resistant

SILOS have seen a wave of popularity come and go, with hundreds of them left stranded in areas where perhaps they should not have been constructed. Perhaps changing types of farming have also been responsible for many unused silos. Nevertheless, they have a permanent place in the feeding program of farmers in practically every state in the Union. As a means of carrying surplus feed into years of shortage, they have demonstrated their worth again and again. As a source of succulent feed thru the winter months, they cannot be excelled. And now with the wide introduction of cereal grass and legume silage, a new era of popularity for the silo has dawned.

It must be admitted, however, that there are circumstances under which feed, tho possibly less desirable, can be stored more economically in a dry condition. The silo is not, therefore, a structure that can be built without careful consideration of all factors, especially the item of first investment and filling costs. And in this connection, reference is made to the permanent above-ground type. Movable and underground silos are discussed on the following page.

Tile and concrete silos enjoy the advantages of attractiveness, durability, fire- and wind-resistance. Tile is commonly found where clay products are available locally, or can be shipped at reasonable cost. A recent development is a clay-stave silo, in which no mortar is exposed directly to silage acids. It is popular with those using large quantities of grass silage, the acid from which apparently acts rapidly on mortar joints.

Wood silos, once the most common type when built of staves, are enjoying a new interest because of improved methods of treating the wood to prevent shrinkage and resulting wind damage. Resistance of the wood to silage acids has made them attractive to those interested in legume silages.

The steel silo has recently been strongly pushed by manufacturers, and presents itself frequently in districts where silos are numerous. It needs firm anchorage in regions of heavy wind.

The well-made concrete silo requires little attention, except for an occasional coat of paint on the walls. Several materials are now available to protect the concrete against serious erosion from silage acids. Without question, the cement stave is most popular. It is quickly and conveniently constructed without forms. As with tile and wood silos, adequate reinforcement

hoops are essential. The increased pressures placed upon many old silos by grass silage has brought to light considerable faulty construction, the worst of which has been failure to place the reinforcement hoops near enough together at the bottom of the silo. Frequently near the top, where they were not so badly needed, a concentration occurred. Some collapses have disclosed failure on the part of the contractor to place enough reinforcing or to bring it around and tie it into the door frames. Shrinking of a few additional steel bands about the lower 15' of an old silo is a simple precaution that may save a great amount of money.

The correct diameter of a silo depends upon the quantity of silage to be fed daily. It is desirable that from 2' to 3' a day be removed over the entire surface of top layer. The warmer the weather, the more must be removed to prevent spoilage. A common mistake is to build a silo too large in diameter.

The improvement of pastures by controlled grazing necessitates summer silage on a great many farms. Its value in carrying a herd thru summer droughts is beyond question. A common practice is to fill the empty silo with first-cutting alfalfa or green cereal. This material is fed during the period of dry, short pastures so that the silo is again empty when the corn is ready to put in.

Sturdy, treated-wood staving



Strength in good hollow tile

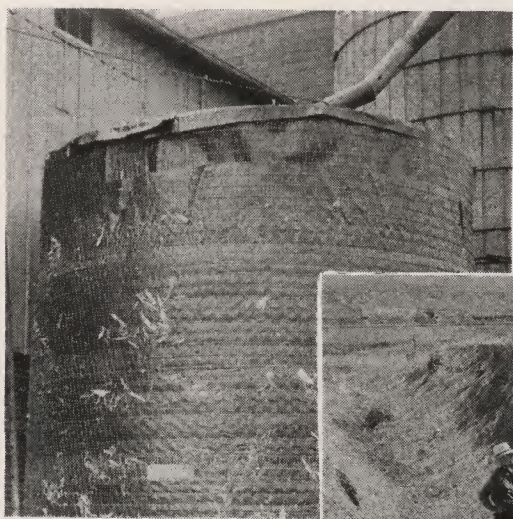


Temporary Silos

Poor relations of impressive silos built above ground, they serve an exceedingly useful purpose and deserve consideration by every stock farmer



This Kansas trench silo has permanent walls to prevent crumbling and caving. Note how silage is cut like a haystack for removal. Natural drainage will prevent freezing



The paper-bag silo is widely used. This one shown at the left is built with welded wire lined with Sisalkraft paper

Another Kansas trench silo of the simple type. In it silage will keep for years when properly sealed. Banks will crumble and increase silo size each time it is used. Its cost is limited to the expense of removing soil from the big trench



W. H. Tammeus

Enos Walters, Carlinville, Illinois, has lined silo with walls of precast, 2' x 4' concrete slabs which are 4" thick. Blocks may be later used for weatherproof feeding floor

OUT of the Drought has come a widespread respect for temporary silos, which have saved many a man's herd of livestock.

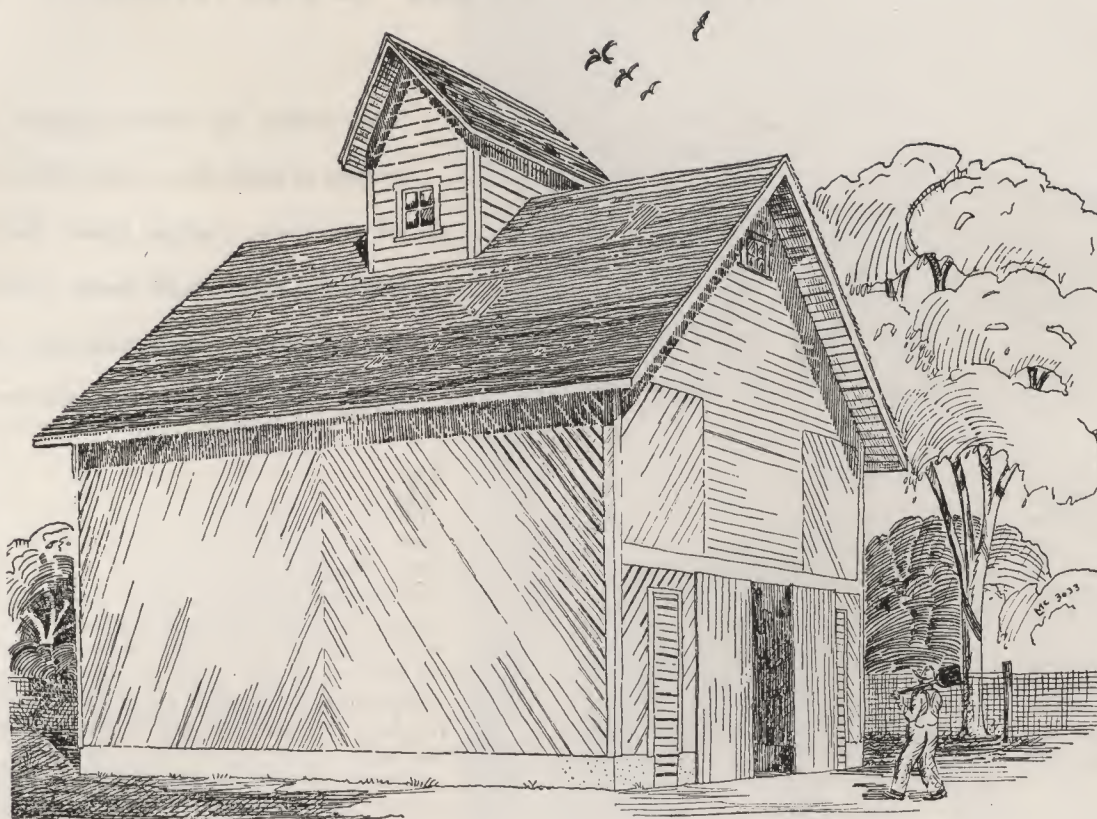
Two main types are commonly used, the trench and the pen silo. The trench silo, which was the original way of preserving green feed materials, will not only carry feed thru a season satisfactorily, but will preserve it for several years when properly sealed against air, or surface water. Its possibilities for protection against prolonged droughts are obvious.

Naturally, the trench silo is not attractive and should be screened from view, where it is convenient to fields and feed lots. The usual size is 8' deep, 8' wide at the bottom, and 12' wide at the top. This provides 80 cubic feet for each foot of length, which will easily hold one ton of silage.

As indicated in the illustration, many trench silos are made permanent by lining the walls with precast concrete slabs or other forms of masonry.

THE pen silo consists of wire fence or slat cribbing lined with heavy layers of special paper. For grass silage this type is successful when two layers of paper are used. Rarely are these silos built higher than 20', and they are usually about that in diameter. The contents cannot be held over the summer. After each section is fed out, the fence should be rolled up, marked, and stored for the next season. The paper may be salvaged for some other purpose. Use new paper for the next season. While the pen silo is inexpensive in every respect, the first cost is highest. The fencing may be used many times with new paper, making each succeeding year's cost very low.

For Safe Grain Storage



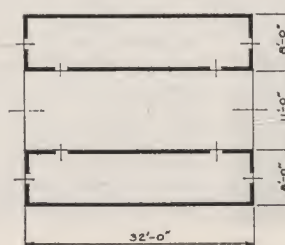
Government storage programs have impressed on stock farmers the need for more adequate storage facilities

PROPERLY constructed, the type of structure shown here has given wide satisfaction thruout the grain and livestock states. So popular has it proved that a permanent place was given it by a committee of 15 state agricultural engineers in making their selections for the Midwest Building Plan Service. As usually built, it has a capacity of 3,600 bushels of ear corn and 2,800 bushels of small grain. The plan is arranged for a crib 8' wide on each side of the driveway, and 3 bins overhead for storage of small grain and shelled corn. Adequate cross braces and diagonal cribbing insure its standing straight under great pressure. Concrete is used for the floors, shelling trench, and foundation.

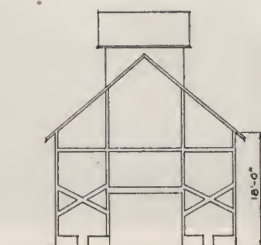
New methods of harvesting have brought grains into storage more rapidly and often with a higher moisture content. It is not sufficient, therefore, to construct a building that is adequate merely for the satisfactory storage of dry grain. Construction must also be made to exclude rats, mice, and other pests.

By combining small grain and ear corn under the same roof, certain economies are possible, as well as the use of one set of elevator equipment. Selection of the equipment before construction of the building will save many alterations.

Because of the great weight carried when filled, a building of this kind must have an adequate foundation. Settling of the foundation is soon reflected in a high rate of deterioration and general dissatisfaction. Adequate bracing and good construction generally are requisites. However, the intelligent filling of such a structure is also necessary to protect it against undue



PLAN



SECTION

strain. Piling corn or small grain to a considerable height in one end while the other remains empty taxes the strength of even a substantially made building. Inside crossies should be provided, ample in number and size and protected against breaking by the settling grain. Without them, studding used in crib and bin construction is seldom sufficiently strong to withstand successfully the outward pressure of the grain.

BEAR in mind that the weakest places are at the joints when wood is used for construction. Nail all joints, or bolt them with care to avoid splitting. A nail is often worthless if it splits the wood.

Farms with low improvement costs usually have practical, well-kept buildings and fences. The improvements should be adequate but not elaborate. Roofs and foundations, as well as windows and doors, are kept in repair. Lightning rods are used to protect the buildings. Gates are kept hung and wire fences are kept tight. Depreciation is minimized by making timely repairs and by keeping the buildings painted. In the interest of economy, the repair work and the painting may be done with farm labor. An attractive farmstead affords satisfaction to all members of the farm family, yet it often costs but little more than an unattractive one.

This year's corn—

Where Will You Store It?



1 Among the least-expensive types of cribs to qualify for sealing fitness, this one makes use of snow fence for sides and ends. With a good foundation and roof, it will last a long time and be low in maintenance

The cribs on these pages are types which have met the test of service, range from low to high in cost, will help you get out of your corn storage perhaps more than you put into it

2 For a greater degree of permanency at some additional cost this crib is very popular. When painted it is attractive and fits well with the other farm buildings. A crop of reasonable maturity will keep well in such a crib



WITH the present-day effort to increase corn yields, new varieties have been introduced which require a longer growing season; and, as a result, corn contains more moisture at harvest time. With the Government's moisture-content standards in connection with corn loans, it is doubly important to provide for the removal of this moisture. The solution to the problem may be found in the kinds of cribs and bins you have on your farm and in husking and storage practices.

A good crib must provide sufficient air circulation, and this and the resultant rate of drying depend largely upon the width of the building. We suggest consulting Government width recommendations for your locality, because they vary over the Cornbelt.

Height should not be too great—dry corn will shell badly if it falls over 20'. Cribs longer than 40' should have either several openings for filling with a portable elevator, or a cross-conveyor if one inside elevator is used.

Since both shelled and ear corn cause considerable



3 To concentrate storage space and make possible a covered driveway at some future date, many farmers built their new cribs in this way last year. Note clearance beneath buildings where dogs may hunt the pesky rats

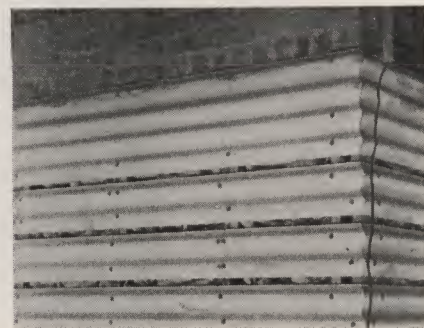
4 No driveway was needed on this farm, so the two crib sections were placed so that only sufficient space was left for air circulation. This builder has set his crib high for shelling convenience and a better rodent-control factor



5 Highly popular throughout the Cornbelt, this attractive structure not only houses corn but also machinery, farm wagons, and a host of extras above the driveway. On a bushel basis alone it is fairly expensive



6 Storage costs per bushel are reduced here by combining corn and small-grain storage. The same elevating equipment can be used for both corn and grain. Built for weights, such a structure will wear well thru the years



7 Corner crib slats shown here represent something new in the farm-building field. They are a combination of asbestos and Portland Cement subjected to great pressure. Attachment to the frame is with leaded nails

loads on side walls, braces are almost a necessity for permanence. The foundation, too, is of great importance. This should extend down to solid ground, and in all cases below the frost line. If concrete is used as a foundation material, it should be reinforced with 2 half-inch reinforcing bars, both near the top and near the bottom of the foundation. The building must be securely anchored to the foundation. The use of gutters and downspouts to carry rain water away from the foundation is recommended to minimize settling and heaving in freezing weather.

To make your crib ratproof, build it well clear of the ground to provide free access to cats and dogs underneath. Clear away piles of rubbish near the crib. Rats do not like to come out into the open. The driveway to double cribs should be protected, doors kept closed. Small wood cribs need barriers; usually the crib is lined with hardware cloth to about 2 feet above the floor. A strip of metal around the outside of the crib extended upward from the hardware cloth will prevent rats from climbing past. Special clay and concrete blocks are now available which have openings for air but which are too small to admit rats.

Shelled corn stored in bins also has some advantages. It needs less space and can be more easily protected against weather, pests, and livestock. Where insects are a hazard, bin-fumigation is easy.

Shelled corn should not have more than 14 percent moisture when stored; this amount is less than for ear corn. Bin walls must be tight to prevent entrance of moisture. Waterproof paper between sheathing and siding is adequate. The bin floor should be well off the ground—and tight to hold the grain. If a concrete floor is used, lay boards over it to prevent dampness reaching the grain.



8 The concrete-block double crib with small-grain storage above is often found in Iowa, eastern Nebraska, and Illinois. Properly constructed, this type keeps a crop satisfactorily with very low maintenance cost



9 The clay-block corn- and small-grain storage unit is a common sight where freight rates permit tile to compete successfully with other materials. Here again, cost of maintenance is low and satisfaction high with the owner



10 An experimental type of steel crib under test by several manufacturers, of whom one now offers a similar structure to the trade. Tests and observations are being made at Iowa State College on this new equipment



11 For many years this type of steel crib has been giving a good account of itself. Steel bins, too, proved safe storage equipment for 1937's crop when shelled and sealed to make crib room for '39's big supply of corn

Cornering Fence

FENCE is our most neglected farm structure, yet it represents an investment of about \$1,500 for 1,600 rods on the average Midwest farm. Its estimated upkeep ranges from 9 to 18 cents per rod, an unnecessarily high figure because ends and corners are seldom built right.

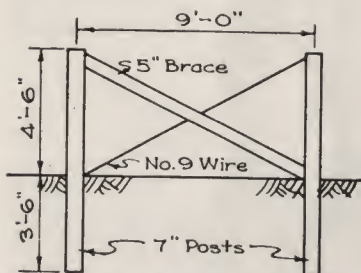
With the many excellent brands of fence now available, no man need take chances in buying the right kind. Very often, however, a good product is partly wasted because the owner fails to take sufficient time properly to anchor it to the ground.

End or corner posts should first of all be of durable material, as a considerable amount of time is required to build a fence. The diameter need not be large on the posts, for a 6" post properly treated against decay is satisfactory for most types of woven-wire fence. Larger diameters are expensive and better results can be obtained by nailing lugs to the bottom of a smaller post. Set the end post at least 3'6" deep in most areas to prevent frost upheaval.

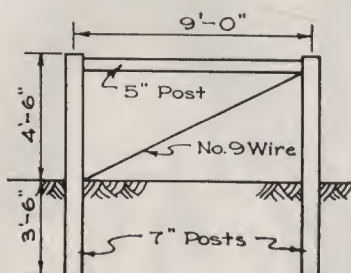
The wood compression brace will depend in size upon its length. For a 9' brace, a 4" round post or a 4" x 4" wood member is the minimum. Long, slender braces buckle and make an unsightly fence.

The wire tension member should be composed of at least 2 double strands of No. 9-gauge galvanized wire. Attach it at the ground line of the corner post and at a point approximately 12" from the top of the brace post.

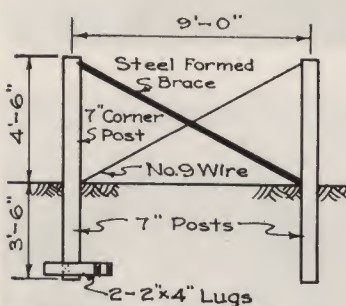
In a series of tests conducted at Iowa State College on various types of end and corner structures, the double-span assembly shown here proved the most satisfactory, being simple, cheap to build, and durable. Treat the wood members to prevent decay. All of the posts, including the wood braces, should be 8' in length. The corner post should be 6" in diameter, the middle post 4" in diameter, and the end brace post 3½" in diameter. Set the 3 posts 3½' in the ground and use 2 double strands of No. 9 galvanized wire for the tension brace.



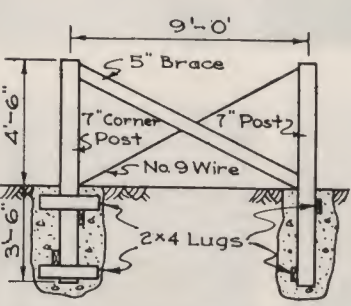
Fit only for light barbed wire when 10' braces are used. Set 3'6" deep



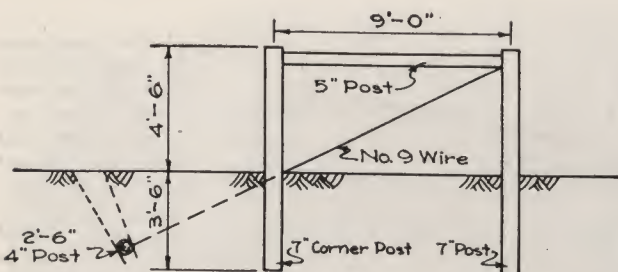
Likely to fail from vertical lift of end post. Better than one at the left



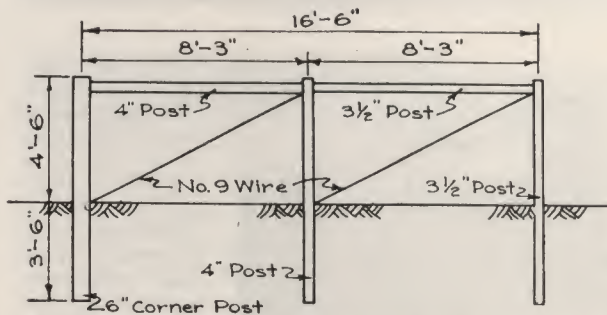
Reliable when 2 x 4 lugs 4' long are notched into post 6" above bottom



Satisfactory but expensive. Lugs 18" long. The hole is cement-filled



Failures caused by tension wire lifting end post are avoided by attaching one end of wire to a "dead man" 3' to 4' back of end post



The double-span assembly is easily built and is relatively inexpensive, only a second brace and tension wire being required



This variation of the double-span assembly is also standing up well in long, hard service



For a corner assembly this one is practically useless. Compression brace is too short



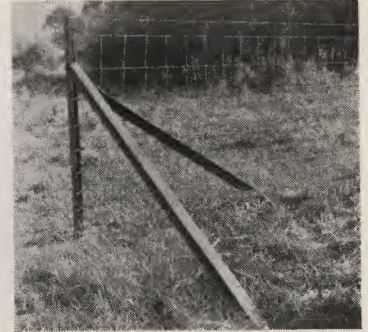
Both the tension wire and wood-compression brace are inadequate, and such a fence always has a very run-down appearance



A big stone holds post, but requires more work than a good corner, is unsightly



Left: Popular in Midwest, this arrangement stands well. Complete drawing and details, page 58



Right: Good steel-corner construction. Both post and braces in cement. Corner-post footings should be made 3' deep, 24" square at the bottom, and come to 18" at top

The distance between the centers of the posts is 8'3", making an over-all dimension of one rod. A double-span corner like this one cost \$8.70 for materials and required 4½ man hours of unskilled labor.

ALWAYS bear in mind the fact that fence is subjected to a great range of temperature, at least in the northern states. Severe contraction will reveal faulty construction that might pass unnoticed under more favorable conditions. There is always the threat of emergency strains produced by cattle drifting in a storm or jammed into a fence corner by quarrelsome herd mates. Consideration of emergencies, as well as everyday usage, is

necessary to build a strong and lasting fence you are proud of.

The rewards of a good fence consist in no small part of satisfaction and pride, for invariably the good farmer strives to build straight fences which are not only sightly, but stand better than crooked ones. Returns from a good fence also are realized in the satisfaction that comes from a fence so secure that valuable livestock will remain where it is put. A few minutes in a cornfield can produce disastrous results in a herd of dairy cows or steers. And, above all, returns from a good fence must be figured on an actual dollar-and-cents basis because fence does represent a big investment. It should be well built and kept in good repair if full returns are to be realized.

Electric Fence

An inexpensive, quick, sure stock control for the man who needs to subdivide acres for efficient crop- and pasture-management. Tested equipment from a reliable fence manufacturer is the prime requisite

EMPHASIS upon grass-farming and soil-conservation has increased the need for temporary fence, always an important consideration with the livestock farmer. Well out of the experimental stage, electric fence is enjoying widespread popularity for this purpose. Pasture-management indicates that rotation of animals adds greatly to the carrying capacity of the soil, as well as to the health of the livestock. Strip-cropping and the terracing of land present a problem in cleaning up crop wastes that is best solved by electric fence.

There are few men who have not at least seen this type of installation. It is built around a controller, which should be placed where it is protected from the weather. This controller governs the flow and interruption of electric current, making it safe under all possible conditions. Numerous fatalities when electric fence first became popular were traced to direct connection between high-lines and fence. Under no circumstances is this safe. The Wisconsin Industrial Commission specifically makes illegal fence energized by any power source in excess of 15 volts, either direct, or thru lamps or other resistance. Batteries must not be charged while the fence is in use.

The balance of the system consists of an electrified conductor or fence wire strung on posts and connected to the controller. Ordinarily 12-gauge smooth wire is used, which is mounted on light wood or steel posts spaced at intervals ranging from 20' to 30' over rough ground, and up to 80' over smooth ground.

Only one wire is used for larger livestock. For example, a single wire about 40" above the ground will restrain cows or horses. For small pigs and grown hogs, 2 additional wires are necessary. For sheep a barbed wire is more effective than a smooth one.

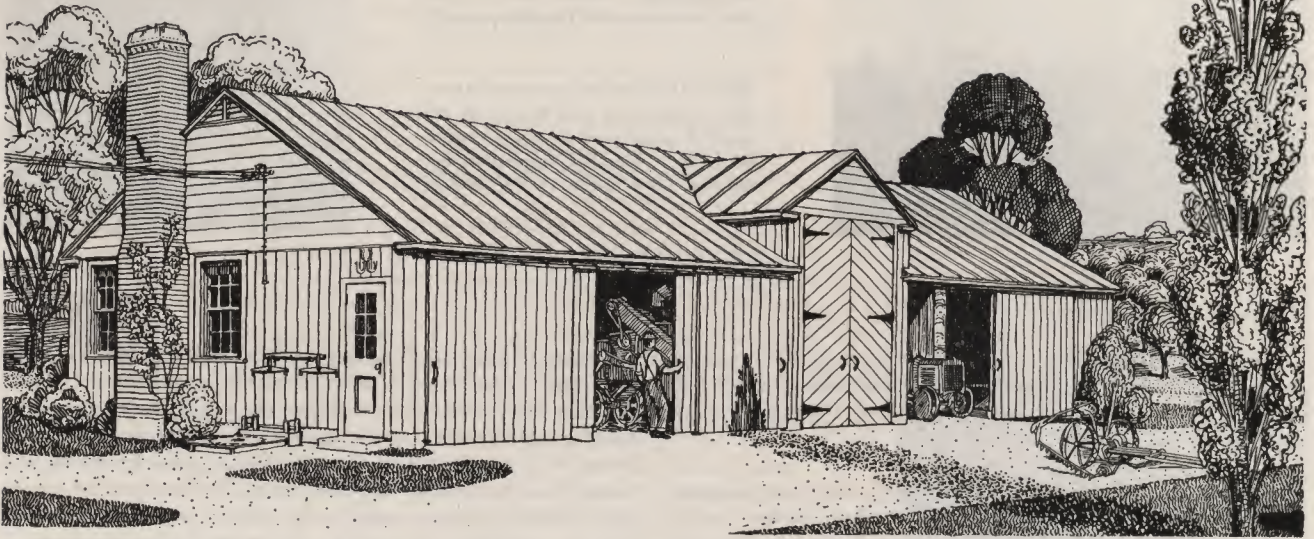
It is a relatively simple matter to move an electric fence, as it is possible to detach the wire from the posts, hook 40 to 60 rods behind the truck, and drag it to its next location. The small number of posts used simplifies their shift to the new location.

Attachment to posts is by means of an insulator to prevent current leakage to the ground during wet weather. Staples reach moist wood in the center of the post, which provides a channel for current leakage; they should not be used. Insulators are as cheap as staples, 50 being enough for about 150 rods of fence. No return wire is necessary. One controller will furnish current for 600 acres of fencing. Connection can be made anywhere along the charged fence wire. When the animal touches the wire, the current is complete thru the ground and causes a shock.

GOOD controllers sell from \$20 to \$40. Units designed for alternating current will consume around 5 kilowatt hours per month. A 4-cell battery for a battery unit will last 90 days. When animals are once trained to respect the shock in an electric fence, it is possible to turn the current off for several days. There is practically no limit to the number of wires which can be charged. Current can be successfully sent over a total distance of 7 miles. Current consumption is the same, regardless of distance, and the cost runs around 10 cents per month. Where a field is located some distance from the buildings, current may be carried to the fence on a light wire or telephone wire, or one wire of any fence. To cross roads or other obstacles, bury lead-covered wires several inches under the ground, lead them thru culverts, or carry them overhead.

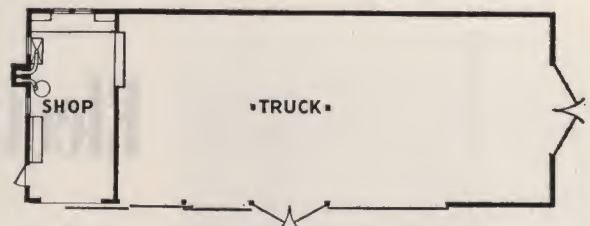
The hazard from lightning is no greater on an electric fence than on telephone, radio, or other electrical equipment. A lightning-arrester is furnished with all good controllers.

Machine Shop and Storage



This combined shop and storage shed is planned for year-around care of valuable equipment, is low in construction cost. Blueprint plans are available at 50 cents a set thru Successful Farming Plan Service, Des Moines, Iowa.

Handy Storage • Power Equipment
Work Space • All-machine Size



THE complete farm shop must meet four requirements. The first requirement is that it provide convenient storage for all shop tools and supplies. A tool that has a place can always be found and will be in serviceable condition for a lifetime if given ordinary care. The plans provide ample shelf, drawer, and rack space for all shop tools. They also provide ample space for the convenient storage of bolts, nails, screws, staples, washers, pipe fittings, paints, sheet iron, rods, strap iron, and lumber. A few hundred feet of rough-sawed, oak lumber stored overhead in the machinery shed will save many expensive purchases and trips to town for eveners, tongues, axles, and numerous other repair parts.

The second requirement is that the shop provide a well-lighted, comfortable place to work. This is important because much of the shopwork can be done during the winter and at times when the weather is unfavorable for outside work. Ample window area is provided for good daytime lighting, and electric lights will prove valuable if they are available. Provisions have been made for a safe chimney so a heater may be used. This chimney has a second flue for the forge to insure a good draught and to give the building an attractive appearance.

The third shop requirement is that sufficient space be provided so almost any machine can be taken in for repairs or servicing. The size of shop shown here will accommodate most machines, the auto, and the tractor.

The fourth requirement is new and will do much to popularize the shop on any farm. This is the need for power equipment. The blacksmith is becoming hard to find in many localities. We find traveling blacksmiths and farmers themselves shoeing horses on the farm. By having a forge, anvil, welding equipment, power drill, grinder, saw, and other smaller power tools, much more work can be done in the shop, and it will become a more interesting place to work. With electrification now

available on many farms, shop-size machines are becoming more popular and their prices have been reduced. The farm shop offers an opportunity for electricity to be used where it can save the cost of the electric bill year after year.

The farm shop shown here meets all of the requirements and is designed to take up a very small amount of space. The farm shop is at one end, while at the other end a 12' x 12' door provides access for hay-loaders, a truck with rack, or other wide or high machines. In the front and center, a door 10' x 12' is provided for larger equipment and is especially suited to the smaller threshing machines and truck storage. If combines, 4-row corn plows, 2-row corn-pickers, and other wide machines must be housed, this door width may be increased to as much as 14' and still remain 12' high. The width of the shed is an economical and convenient size, with doors along the front and at one end. If desired, additional doors may be provided along the rear.

A concrete floor is desirable, but if an effort is made to block up machines such as disks, harrows, and plows, an earth floor will be satisfactory. This floor should have at least a 6" fill so spring rains and water from melting snow will not run in.

The housing of farm machinery is always a sign of thrift and good management on the Cornbelt and Dairyland farm. The machinery shed shown here is designed to meet the various requirements of the average farm, altho the length may be increased or decreased if necessary. One thing is certain: Any one building the machinery shed will do well to include the shop, and his work will profit by it.

Some of the reasons for the low cost of this machinery shed are its convenient size and shape, the simple but substantial framing, the 8' height from foundation to eaves, and the metal roofing which may be applied over a skeleton of rafters and widely spaced roof boards.



Successful Farming's BUILDING MANUAL

Whether you hire labor or do the work yourself, this Manual has been planned to help you. It is filled with practical suggestions for the use of sound materials and good workmanship, essential to building lasting value into your farm

THE final value of your home and service buildings depends upon their satisfaction to you and upon the quality you have built into them to make that satisfaction last thru the years. Remember: good basic materials make a building an investment; unnecessary materials make it an overhead expense. You and you alone can draw the line between them. To help you we recommend the following pages on materials, equipment. They are intended to point out the advantages today's engineering technique has to offer. Our editors stand ready to back them up with further information, installation details, blueprints as a reader service of Successful Farming. Your agricultural college will be a fertile source of informa-

tion tailored to individual needs. Many of the manufacturers of the materials and equipment suggested in the Building Manual advertise in Successful Farming. Most of them maintain trained staffs to help you without cost. And their literature is packed with how-to ideas. Such printed material is available by mail or thru calls to your local dealer; it will form a fascinating reference library for your building future. When you and your family have gone over the Manual, have written for all available helps, and have studied the literature of manufacturers, you may be certain that your final decisions will be sure, profitable, and will result in life-long satisfaction.

Water-Supply and Sewage-Disposal Systems

GIVEN a reliable source of plenty of pure water, the farm home can have everything that any home on a city water main has. After all, a water main is just a pipe leading from a pump.

Equipment available today makes it easily possible for the farmer to install, operate, and maintain his own individual water-system and sewage-disposal plant.

To supply the house and all the farm buildings with ample amounts of water requires a considerable initial investment, of course. But if the land is worth working at all, it is an investment that begins to pay dividends with the first turn of the faucet. In fact, it is one of the most profitable investments that can be made in your farm home and buildings. These profits are immediately evident in increased comfort and convenience for every member of the family, in the added safety to the family's health, and in actual cash-dollar profits to the dairy and poultry farmer.

Locating the Well

Logically, the water supply is of first importance; the more unlimited it is, the better. And just as logically, when you have an abundance of pure water, the necessary investment for a sewage-disposal system to prevent risk to the water supply is definitely worth while.

If you are locating the place for a new well, keep it out of reach of contamination from sewage-disposal areas, barnyards, or any other contamination sources. If you have any doubts on this job, you can be set right by a study of Farmers' Bulletin 1448, *Farmstead Water Supply* (U. S. Department of Agriculture, Washington, D. C.)

To put this water supply to work in your home you become your own water company. Pump and water mains are installed according to the needs of the individual farm.

Types of Systems

One method employs an elevated tank supplied by force pump. Such an outfit gives even pressure, supplies a good reserve when tank is large enough; but water may be warm in summer and require protection against freezing in winter. Usually maintenance cost from year to year is an item with such equipment.

A cistern or reservoir tank underground on a hill near the farmstead does the same thing as a tank on a tower, and avoids heat of summer, frost of winter, and also is extremely economical of maintenance costs after the first investment.

Even without the hill or tower your force pump can still assure water under pressure by a pneumatic tank which can be in the basement or underground. The water is forced into the tank against air trapped in it. The pressure forces water to every faucet in your plumbing system as long as there is water in the tank, whether or not the pump is operating at the moment. Also, pumps right in the well itself may be operated automatically by compressed air at the turn of a faucet.

Selection of Pump

The availability of electricity has been a real lifesaver to the man who must have his own waterworks. Here again you will find your needs well cared for by the equipment already on the market. What is more, those pump-manufacturers whose advertisements you have seen in *Successful Farming* have engineers on their staffs.

If you tell them your well depth, distances to be covered, amount of water to be used, they can tell you the pump to use, whether deep-well or shallow, proper pressure tank equipment, and size of pipe so as to avoid friction losses that might cost you too much for power.

Septic Tanks

The sewage-disposal system has to be laid out strictly according to the individual situation. The one point that must be kept in mind with a sewage-disposal system is adequate capacity.

Right here may be mentioned Farmers' Bulletin 1227,

Sewage and Sewerage of Farm Homes. Even the technical details of construction are discussed so thoroughly that a good workman can tackle this end of the sanitary system with full confidence.

Today from several manufacturers of septic tanks you can obtain at relatively low cost the tanks themselves and every accessory required for perfect operation. There is the grease trap on the kitchen-sink drain, the basement sump pump to take care of laundry waste in some situations. The special tile that some prefer to use in filter-bed arrangement can be had for any situation.

For those whose land is so level that they have given up the idea of a septic tank, there are now sewage-ejector pumps of the automatic type to force the effluent to the filter beds. Every one of the pump-manufacturers has trained men on the staff to help you.

House Plumbing

The installation of a complete plumbing system in the house will require the help of a competent plumber. You should consult him on the problem just as you would the veterinarian about animal diseases, or a mechanic about engines.

You may be puzzled by the wide variety of pipe materials and pipe sizes. For that reason it's a good idea to learn all you can about a few important principles of water-system installation. While distance from pump to house may require pipe size of 1" or even larger to avoid friction loss, the ordinary house will require pipe no larger than 3/4" from the point where the main actually enters the house. Whether iron, copper, or brass pipe is used depends somewhat on the character of the water and its consequent effect on different metals.

Where one is putting in plumbing as a remodeling job, copper tubing or pipe may be particularly useful because it can be bent easily, whereas some other pipe will require cutting, threading, and the use of elbows, tees, and so on.

A small matter, but one helpful in case of faucet repair or service is the idea of valving each line. In other words, where you take off a branch to each faucet for the kitchen sink, put in a valve that will allow a free flow of water but which can be closed if anything goes wrong with that branch. Thus ordinary repairs will never occasion any complete shutting off of water supplies in the house. To help you to understand the principles of house plumbing there is still another bulletin, Farmers' Bulletin 1426, *Farm Plumbing*.

Sewage Pipes

Just as important as the supply pipes are the waste or drain pipes. Cast iron has long been the standard for soil pipe. Some use is made of galvanized iron or steel pipe with threaded connections. See that the soil pipe of your sewer system is connected to the septic tank in a way that will prevent roots from ever stopping it up. It can be done, and the only difference between entire satisfaction and constant trouble is good workmanship.

Plumbing Fixtures

Of course, the more fully you can equip your home to make use of the utility system you have installed the greater will be your day-to-day satisfaction and enjoyment.

Even if you have in the kitchen the simplest kind of kitchen sink, it will be 100 percent worth while. But you can get sinks double, or divided; both sides alike, or one side deep; cabinet sinks. You can get them with the swinging-mixing faucet; sinks complete even to the automatic dishwasher are available.

The bathroom and toilet are indeed a matter of course as a part of the complete plumbing job. But it's smart planning to include an extra shower. The cabinet shower, factory-built, provides an economical way of adding comfort and convenience. It can be installed easily in the basement, in a corner of the workroom, or in any small space off the rear hall.

A water-softener is a necessity where the water is hard. It not only makes work easier in laundry and kitchen but it pays dividends in saving liming-up of pipes, in soap and cleansers.

A water-softener costs usually much less than a cistern. If you simply regenerate it as required from time to time, you'll have the economy and enjoyment of soft water at very low cost.

Water Heaters

And by all means let us have *hot* water. A range boiler in connection with any furnace will take care of the situation in winter. In fact, an insulated storage tank in connection with many modern oil-burning or other automatically fueled heating plants may serve as a constant supply of hot water every day in the year.

When the hot-water supply must be from a unit separate

from the furnace, there are numerous types of equipment from which to choose: coal-burning tank heaters; self-contained, insulated tanks and coal-burning heaters with thermostat controls for draft and check; oil-burning tank heaters, and automatic, oil-burning water heaters and insulated storage tanks and, finally, electric fueled automatic water heaters.

Once you have water everywhere at the turn of a tap you are going to appreciate the feeling of the old, old lady whose life had been spent drawing water with a windlass. She had only a pitcher pump at a flat-rimmed sink, but it was right in the kitchen, and the old lady gazed with rapture on that early-day improvement as she exclaimed, "How convenient!"

Electricity for Power and Light

LIKE water flowing in a pipe, electricity is a force which runs thru a series of wires to the points where it is used. If pipes are too small, the flow of water will be greatly decreased (even entirely stopped) at some points if too many outlets are opened at once. In the same way, if wires are not large enough, the limited amount of electricity that can pass thru them will result in dimmed lights and generally unsatisfactory service when several appliances are used at the same time.

Adequate Wiring

How can an ample supply of electricity be assured at all points at all times? By good wiring, carefully planned—in other words, by *adequately* wiring your farm home and buildings. Simply expressed, adequate wiring means: (1) a service entrance of correct size (capacity); (2) enough circuits, each with the correct wire size; (3) special, heavy-duty circuits and outlets for range, water heater, and larger motors; (4) sufficient outlets and switches, conveniently placed.

It is impossible, except at relatively higher cost, to amplify or change a wiring system, once it is installed. Wiring is not a bracelet to which extra links can be added at will. True, you can extend wires to this or that room or building, but the *basic* circuits are as fixed and rigid as the walls of your home. Therefore, for the sake of comfort, convenience, safety, and economy, plan and install your wiring system to meet your future as well as present needs.

Reducing Voltage for Use

Electricity for your farm is usually supplied by what is known as 230-115 volt, single-phase, 3-wire service. Lights, small appliances, and motors not larger than $\frac{1}{8}$ horsepower operate at 115 volts. Ranges, water heaters, and larger motors require 230 volts. However, the current in the transmission or highline is at a much higher voltage, usually 6,600 or 13,200 volts. Therefore, it must be reduced or "transformed" before you can use it.

Circuits Needed

Depending upon the tasks to be done by electricity, adequate, efficient, and safe service requires several branch circuits. At least one 15-ampere circuit should be provided for each 500 square feet of floor area computed from the outside dimensions of your house—not including open porches and unfinished parts of the attic and basement. At least one appliance branch circuit should be installed to supply all convenience outlets in the dining-room, kitchen, and pantry, and another for such service in the laundry. Individual circuits should be provided for the range, water heater, bathroom heater, oil burner, stoker, laundry hot plate, and all other fixed appliances rated at 1,000 watts and over.

A main switch, controlling all circuits to the other buildings, should be located in your home. However, separate control switches in each building also are desirable. As you may know, fuses and circuit-breakers are safety devices which, in the event of an overload, open the circuit and thus prevent fires and other serious trouble. It is most important that these, as

well as your wires and switches, be of the correct capacity to protect your installation and also permit you to make full use of all of your electrical equipment.

Size of Wires

The wires from the central distribution point to the home should be of such size that the voltage drop, at maximum load, will not exceed 2 percent of the voltage at the source (the point where the power company's wires join yours). Another point to consider is that if you try to pull a great deal more electric current over a small-sized wire than its capacity was built to stand, the resistance will cause the wire to get red hot.

Second only to the correct-sized wire for your comfort and safety is an adequate number of convenience outlets. Every room should have enough duplex (double) outlets to enable you to operate small appliances and portable lamps at any point you desire.

Except where proper overhead connections are provided for the operation of a washing machine, ironer or iron, drop cords should never be used as they, too, are unsightly and dangerous. Nor should toasters, vacuum cleaners, curling irons, and similar appliances be connected to a lamp socket.

Lighting Switches

The primary purpose of switches is to light your way ahead. To do this, you should be able to turn on the lights at the top or bottom of stairways, in the attic, basement, halls, or garage from a remote point. Three- or four-way switches sometimes are required for this purpose as they permit the light to be turned on at one point and off at another, or vice versa.

The kitchen is truly the workshop of the home. Therefore, good lighting is as imperative as in any other room. It is best to install a plain, efficient central ceiling outlet and use a 100-150- or 200-watt lamp, the size depending upon the floor area and the color of the walls and ceiling. This light should be operated by 3-way switches located at the doors to the dining-room and rear-entrance. Usually, a pull-chain bracket lamp over the sink or side working table also is desirable. The best rule to follow is to so arrange the lighting of this room that you never will have to work in a shadow.

Convenience Outlets

A sufficient number of convenience outlets should be installed in the kitchen, about 3 feet from the floor, so that you easily can use all your electrical appliances. At least one appliance branch circuit should be provided to supply the convenience outlets both there and in the dining-room. A separate 3-wire branch circuit is required for an electric range. Outlets should be placed near the sink and table or working space, and others provided for the refrigerator and clock.

For general illumination, all bedrooms may have a center ceiling outlet operated by a wall switch at the entrance. Supplemental light should be provided for the vanity or dresser, preferably from table rather than bracket lamps. The former can be attached to convenience outlets and controlled at the lamp socket. Protection as well as convenience makes it ad-

visible to install a 3-way switch in the master bedroom to control the yard lights.

In addition to those already mentioned, convenience outlets also should be located near the head of the bed for a reading lamp or heating pad. If the room is large, a few additional outlets will permit the more easy use of a vacuum cleaner.

Safe Sockets

Bracket lights, on opposite sides of the mirror, as well as a center ceiling unit should be provided in the bathroom; the latter operated by a wall switch, the former at the fixtures. In small bathrooms, bracket lights controlled by a wall switch probably will furnish adequate illumination. To prevent corrosion from moisture, all light sockets should be of porcelain or composition material.

A special non-metallic (bakelite or other similar material) safety type duplex outlet should be installed near the wash basin for dry shaver, curling iron, immersion heater, milk-bottle warmer, hair-dryer, health lamp, and like appliances. An ordinary convenience outlet may be provided for a portable heater. The special safety outlet should be placed as far from the bathtub as possible—both its location and material being such as to reduce to a minimum the danger of electrical shock while the body is in contact with water.

It is essential that a light be properly placed to illuminate fully the stairway to the basement. This should be operated by a wall switch, with pilot signal, located at the head of the steps. Other lights, preferably placed near the ceiling and fitted with covered reflectors, can be controlled by a single switch at the foot of the stairs. If there are two entrances to the basement, a 3-way switch should be installed at each door. Porcelain or composition light sockets should be used here as in the bathroom.

Power Outlets

Enough properly-placed convenience outlets, preferably located in the ceiling to keep the connecting wires dry, must be installed to operate the washing machine, ironer, small electric tools, and other appliances. If a water heater, water-supply system, oil burner, stoker, or air-conditioner is installed, a special circuit must be provided for each piece of equipment.

Two items are of prime importance: First, your electrical contractor should carefully follow the detailed rules of the National Electrical Code relating to installations of this type. Second, you should make a rough floor-plan drawing of each of your farm buildings and, with the help of your electrical contractor, indicate on each the number and position of lighting units, convenience outlets, switches, and the special wiring needed for motors and motor-driven appliances.

If you have been getting along with the light from a single kerosene lantern, you may believe that one electric light will be sufficient for each building or space. However, this generally is not the case, as the amount of light required will depend on the area to be lighted and the kind of work to be performed.

Reflected Lights

The light should be shaded and directed. Two types of reflectors being most commonly used in farm buildings are the RLM standard dome and the shallow dome. The first type affords greater protection from glare and, except where the roof is higher than is usually found in farm buildings, is recommended for use with 75-watt and larger lamps. The second type of reflector spreads the light over a wider area and is recommended for wide spacings.

Wiring for your motors and motor-driven appliances may be installed in either one of two ways: A separate branch circuit may be carried to each motor from a distribution center; or one circuit, known as a "sub-feeder," may be carried to two or more motors. In either case, the size of the wire and overload protective devices for the circuits and motors should conform with those specified in detail in the National Electrical Code. Otherwise, there will be an excessive drop in voltage with resultant unsatisfactory motor operation, possible overheating, and the creation of potential fire hazards.

Good lighting is so important for the service buildings that the most common needs are discussed separately here.

Wiring the Dairy Barn

Because cleanliness is such an important factor in keeping low the bacterial content of milk, the dairy barn requires even better lighting than other barns. Where the dairy barn has the usual arrangement of 3 alleys, two for feeding and the other for milking and cleaning, lighting outlets should be installed in the center of each alley with the units spaced 10 to 15 feet apart. For the care of young calves it is desirable to place a local light over each box stall unless one of the alley lights comes directly opposite.

The number and location of convenience outlets in the dairy barn is important. One outlet for every 5 cows will make long cords unnecessary when using portable milking machines or electric clippers. Such outlets should be wired to circuits which do not supply any lighting outlets and should be equipped with 15-ampere receptacles. These circuits should have not less than No. 12 wire and no more than 12 outlets should be supplied by each circuit. Two $\frac{1}{4}$ hp. motors or three $\frac{1}{6}$ hp. motors may be operated from such a circuit at the same time.

Outlets in Barn

Where a pipe-line type of milking machine is installed, one outlet for every 10 cows will be sufficient for other purposes. Convenience outlets may be installed along the back wall, above the stanchions or on posts—it being important that they be located sufficiently high to protect them from mechanical injury.

The various operations done in the milkhouse, such as separation, cooling, and bottling, require the most sanitary and orderly of conditions, for which good lighting is an excellent aid.

A central light is usually adequate for each of the rooms of the milkhouse. For motor-driven equipment in the milkhouse, permanent connections should be made to permanently-installed motors, while convenience outlets should be provided for connections to portable motors and appliances. A suggested arrangement is to have one appliance circuit with two convenience outlets for the separator and churn, one circuit with one convenience outlet for the refrigerator, and one circuit with permanent connections to the cooler compressor and agitator. A convenience outlet connected to the lighting circuit should be provided for a fly trap.

Lighting Cattle, Sheep, and Hog Barns

A row of lights and reflectors over the feed troughs usually will give adequate light at the troughs and over the floor of the cattle barn. In large barns, additional outlets are necessary and, therefore, general lighting for the entire area is recommended.

Where sheep sheds are wide with 2 rows of feed troughs having a center runway, general lighting may be provided by 20- to 60-watt lamps in suitable reflectors mounted at the ceiling. In narrow sheds, a row of similar units directly over, or not more than 4 feet behind the single feed trough, will be found satisfactory. In the open shed, units frequently may be mounted 12 to 18 feet high.

Especially when large, the hog shed is somewhat similar to the closed sheep shed. Therefore, the lighting arrangement is similar. If an electric brooder is to be used, a special circuit with a power outlet of the proper capacity will be required.

The haymow is located in the upper part of most barns. One or two 100- or 150-watt lamps for each mow—placed high against the roof in shallow dome, angle, or RLM reflectors—will eliminate all danger and greatly facilitate work. The units should be fitted with dustproof reflectors, and so contracted that they can be lowered on a cord for cleaning and repair. They should be controlled by a switch at the bottom of the ladder or stairs.

Lighting the Poultry House

The hen house requires light for the normal work of the farmer and also to increase egg-production by extending the daylight hours both morning and evening, especially in the winter. Usual practice is to use one 40-watt lamp for each 200 square feet of floor area, the lights being equipped with shallow dome reflectors and hung just high enough above the floor to illuminate the back roosts.

To obtain the greatest benefit from artificial lighting for

increased egg-production, dimming equipment or an auxiliary lighting circuit should be provided. The former is preferable as it imitates the slow fading of daylight and thus allows ample time for the hens to roost. The auxiliary circuit, using 10- or 15-watt lamps which give a dim light when used alone, is turned off after allowing sufficient time for the hens to roost. Each system may be controlled by a time clock or manually.

Incubators and Brooders

The arrangement of the incubators will determine the outlet locations in that room, as light should be provided on their front surfaces. In other parts of the room, if it is large, general lighting is necessary.

A special branch circuit is required for the brooders. Where the roof is low, convenience outlets for electric brooders should be directly overhead. In some cases, heavy-duty receptacles should be used and, in all cases, your electrical contractor should install wiring of sufficient size to carry the current load represented by one or more electric brooders.

The lighting of a small machine shop, which contains a workbench, forge, anvil, grindstone, and smaller tools, should be designed to provide good local illumination for the individual jobs—in addition to some general lighting. The large shop and machine shed need only be lighted as storage spaces unless they are put to more specific use, as, for example, when garage space is included.

The Machine Shop

Suitable branch wiring circuits should be provided for the permanent motor-driven equipment of the machine shop, with two or three convenience outlets for the operation of portable tools such as electric drills and the like. The latter should be provided with extension cords of the type that will withstand hard usage and of sufficient length to reach various parts of the shop. All extension-cord lamps should be provided with a wire guard.

For protection against thieves, as well as from walking into or tripping over unseen objects in the dark, it is both desirable and necessary to have an adequate system of yard-lighting. A little light goes a long way on dark nights. For that reason, only three lighting units are required for the effective lighting of the average farmyard—one at the house, one at the barn, and one at the garage. Yard lights should be at least 15 feet above the ground and equipped with flat-dome reflectors. The height is necessary to allow a wide spread of light as well as to enable a person to see beyond it. Without reflectors, much of the light would escape uselessly upward.

If you will insist that your farm home and buildings be lighted and wired in accordance with the recommendations briefly outlined, you will have electric service that will yield the utmost in comfort, convenience, safety, and profit for years to come.

Financing Your Building Program

LET'S suppose that after you've checked the farm building inventory in the middle of this book, you find an opportunity to remodel or construct a new building that will add to your income or comfort.

Suppose, too, that the crop money isn't in yet or it's a sizable job and that you say, "Let's do it now!" Where should you go to get a loan that carries a low interest rate, plenty of time to make repayments, and ample money to do the job you want?

Farmers will find their local credit sources, particularly those with whom they've done business satisfactorily before, their best sources for information when it comes to their remodeling or new-building loan. Some building-material dealers are willing to carry small amounts on open accounts. If more money is involved, they'll take a note.

Whatever deal you make with your local bank or firm will depend on local rates, your credit history, and assurance of repayment.

Altogether, these sources just about cover the ground:

- (1) Your local banker.
- (2) Your local building-material dealer.
- (3) The four FHA types of loans:

Title I, Class 1—*remodeling* loans up to \$2,500, 9.72% interest, up to 3 years, 32 days to repay, pretty much a character loan.

Class 2—*new service buildings* fall in this class with loans up to \$2,500, 9.72% interest and up to 10 years, 32 days to repay. Again, a character loan with no specific requirements on security.

Class 3—*new residential dwelling* loans up to \$2,500, 5.85–6.69% interest and up to 15 years, 5 months to repay. First mortgage required as security, 5% down payment.

Title II covers *new homes* only, up to a \$16,000 mortgage, 10 to 20% down payment, 5% interest, including the mortgage-insurance, premium up to 20–25 years to repay. Farmers are required to spend 15% of loan on labor and materials.

To get an FHA loan, ask your local lending institution for the full details since it, not FHA, furnishes the money. FHA simply guarantees the lending institution against loss.

(4) Farm Credit Administration loans which fall under these three divisions:

Federal Land Bank—New building or remodeling loans up to \$50,000, 3½% interest at present, 34½ years to repay, first mortgage required as security, plus a 5% stock investment in your local national farm loan association.

Land Bank Commissioner loans—for new building or remodeling, up to \$7,500 for a maximum of 32 years, 3½% interest at present, first or second mortgage required as security.

Production Credit Associations—loans cover any type of farm building or remodeling, are made on 12-month, renewable notes, 4½% interest, no specific security required. Five percent stock investment is necessary.

To get any Farm Credit Administration loan, talk to the national farm loan association in your community or write your nearest Federal Land Bank.

Now for those additional questions you probably have by this time:

1. *What is interest?* Interest is the wages you pay to hire the use of money. Farmers have had unusually low interest rates in recent years—take advantage of this if you can put the money to work advantageously.

2. *What kinds of insurance will be required?* Usually loss against fire, hail, windstorm, and explosion. An amount equal or above your loan is required; and in case of loss, you get all over the amount owed.

3. *What does FHA do?* FHA loans no money, merely insures the lending institution against loss, the borrower paying the insurance premiums for the insurance of the Title II mortgages.

4. *Can funds from an FHA loan be used to refinance present indebtedness?* Yes, after the 15 percent provision is met. FHA will not insure the mortgage until all existing indebtedness is paid off, except crop loans and chattel mortgages on equipment.

5. *Why does FHA require 15 percent of loan to be spent on materials and labor?* Congress put in this provision to insure some expenditures for building. Farmers can do the work themselves by putting the job thru a contractor who hires the farmer to

do the work. Improvements on new buildings added must be necessary and permanent.

6. *Can loans be paid off before maturity?* Be certain that your note includes some provision that will permit prepayments.

7. *Can a farmer have both a Federal Land Bank and a Land Bank Commissioner loan on the same property?* Yes, the former taking a first mortgage, the latter a second mortgage.

8. *How can a National Farm Loan Association be located?* Prob-

ably one is located in your county; if not write the Federal Land Bank.

9. *Miscellaneous advice to borrowers:* Get your lending institution to put *all* the costs of borrowing to you in a letter to prevent misunderstandings. Talk to your building-material dealer who can help arrange your financing. *Don't* borrow if repayment means pinching your family income. *Do* borrow if the cost in interest is less than the profit better buildings can mean in terms of cash and comfort.

Heating—Furnace Installation

THE ideal in constant all-room heat is approached when one can have a central heating plant. Its size and the details of its actual installation may properly be left in the hands of your local heating engineer. Your part in the move for more satisfactory heating is the choice of types of plants. Briefly, they consist of (1) pipeless or one-pipe furnace; (2) gravity-type pipe system; (3) vapor or steam heat; (4) hot-water heat.

Warm-Air Furnaces

The pipeless warm-air furnace is the least expensive to install, especially in old houses not easily adapted to central heating plants. There is, of course, a concentration of heat and the possibility of cold floors, unless one or two cold-air intakes are installed near outside walls. Thru them cold air is brought back to the furnace under the floor instead of over it.

The gravity-type furnace distributes warmed air to each room thru a special pipe. Cold air is returned to the furnace casing from two or three points where the greatest accumulation of chilled air may be expected. Unless electricity is available to operate a fan in the furnace, the gravity type, like the pipeless furnace, must be located in the basement near the center of the house. A deep basement that will permit ample slope to the heating pipe is essential to satisfactory service. Where such a basement is not available, the furnace may be placed in the utility room and warm air circulated thru the house by motor-operated fan or blower, which greatly reduces the size of warm-air pipes to the various rooms. An added advantage of the blower system is an air filter which removes dust particles from the warmed air. The blower likewise proves a comfort in summertime.

Steam and Hot-Water Systems

The steam and hot-water plants represent, naturally, a considerably larger investment. Heat is obtained by forcing steam or hot water from a central furnace thru pipes to a radiator in each room. As the steam or water cools, it condenses and flows

back to the furnace to be reheated. There are many types of hot-water plants, including both gravity-circulation and pump-circulation types. The one you select will depend upon the construction of your house and the room arrangement.

Because manufacturers of these various heating plants have a big investment in their businesses, they make every effort to improve their equipment from the standpoint of economy and satisfaction. When you have decided which one of these types shall heat your home, you may place your confidence in the manufacturers' representative. Your job is to acquaint yourself with all of the equipment on the market, its cost, adaptability, durability, and ease of operation.

Fuel a Factor in Selection

Fuel in the farm home is likely to be either wood or coal. Your future satisfaction depends upon making it quite clear to your dealer the kind of fuel you will use and insisting that the furnace he installs be adapted to that type. Coal enjoys an advantage in the space required for storage. With the automatic stoker it is possible to use a very low grade of fuel. Stoker-fired plants are controlled by automatic thermostat, are fuel-savers, and take much responsibility from the owner's mind. Of course electricity is required to operate them.

Oil for heating is used the country over, and every community has its wagon service. Such fuel is easily stored, is automatic, and offers complete freedom from ashes or shovel. In those communities where natural gas is available to most farm homes, it may be put into central heating plants under ideal conditions.

Buying the heating plant involves the same essentials of common sense required in buying a farm machine, the only difference being that most men have more experience with machinery. In either case one faces the necessity of becoming thoroly informed if he is to make a satisfactory purchase. As you become informed, you will be amazed at what invention has done for house-warming on the farm.

Solid Foundations for Permanence

WHERE a choice of sites is possible, preference should be given to a location having surface slope and good drainage. Wherever the ground water is near the surface, a cellar needs a 4-inch tile drain around the outside of the bottom of the foundation. The drain should have an adequate outlet. Refilling the trench of the foundation drain with broken stone or screened gravel, thus placing a belt of coarse material around the cellar, is a great aid in collecting and carrying off seepage water and intercepting dampness from the adjacent ground. Short drains or shallow concrete or tile gutters should be laid from the downspouts.

Foundation Requirements

The foundation of a house may consist of masonry walls, a

series of piers, or a combination of both. The required thickness of wall and the size and number of piers depend upon the material used, the weight of the house, and the bearing power of the soil.

Base Walls

If there is no cellar, plain walls 8" thick started on firm ground below frost depth are generally sufficient. The top should be at least 8" above the surrounding ground, and greater height may be necessary for proper grading. The walls should have ample screened openings above ground and on opposite sides, to ventilate any enclosed space thoroly. The base of the wall should be placed on firm, dry, level soil or bedrock. In some localities extra fill will be required.

Importance of Footings

A footing course or flat, widened base is often needed to distribute the load, provide a good working surface upon which to construct the wall, and, if there is a cellar, resist tipping of the wall. For ordinary one- and two-story buildings with full-depth cellars it is seldom advisable to make the footing courses less than 14" wide and 6" thick. They should be at least 4" to 8" wider than the foundation wall. Their thickness must be sufficient to avoid cracking.

Basement Wall Requirements

Recommended thicknesses for full-depth, exterior cellar walls to support ordinary 1-story or 2-story houses under average soil conditions are as follows: for rubble stone, 16"; for solid brick or hollow concrete blocks, or structural tile, 12"; for 2311-made solid concrete, 8".

In localities subject to heavy gales heavier foundations may be necessary. In such localities the house should be secured to the foundation by $\frac{3}{4}$ " anchor bolts placed 6' to 8' apart and set about 18" in the wall. If the foundation is of concrete blocks, or tile, the bolts should extend thru at least 2 courses. Whenever hollow units are used they should be filled with con-

crete at anchor bolts and beneath floor beams or other concentrated loads.

Waterproof Materials

Making concrete and other masonry watertight and damp-proof requires the very best workmanship. The use of waterproofing fabrics and bituminous coatings and the preparation of stone, brick, tile, or block walls for the application of damp-proofing paints and Portland cement plastering are recommended. These methods are for excluding water. They do not excuse the making of foundations less substantial than may be necessary to guard against settlement and heaving by frost.

A house having a central column or pillar may have $\frac{1}{4}$ of its total weight so supported. Columns and pillars should not rest on floors but should have independent support on footings of ample size to avoid greater load per square foot of bearing soil than that under the walls.

Remember that well-designed and constructed foundations go far to lessen depreciation of houses and to prevent such troubles as wet cellars, bulged or cracked walls, broken plastering, warped floors, sagging doors, and sticking window frames.

After all, your house is no better than its foundation.

Insulation for House and Service Buildings

WHENEVER the temperature inside a building differs from that outside, heat tends to travel thru the walls from the warmer side to the cooler. That's where insulation comes in—it slows down or stops the passage of heat in or out.

Of course, heat can pass in ways other than thru floors, ceilings, and walls. But weatherstripping will block most infiltration of cold air and double-glazing and storm sash can cut down the winter loss thru the windows. So the greatest possibility of escape or entry of heat is right thru the walls or ceiling.

To understand the need for practical insulation we must get acquainted with *how* heat travels. It moves in three ways: by *radiation* (travel independent of air currents or atmosphere), by *conduction* (transfer of heat from one solid or semi-solid or liquid to another), and finally by *convection* (out- and upward-traveling heated air).

Types of Insulation

A common material used in general farm insulation is the rigid or structural type of insulation made of pressed fiberboard, which often serves both as a heat-stopper and as a plaster base and may even be applied over old plaster as a new wall finish.

There is flexible insulation in which bats or blankets of wrapped insulating "wool"—all types of vegetable and mineral fibers—can be applied snugly between studs, joists, or rafters.

A third type of material, fill insulation, is simply bulk material made up of pulverized rock, pulverized wood, mica, cork, glass, gypsum, or other basic materials of a cellular makeup. One of its greatest advantages is that it can be blown or poured between inner and outer walls already built. It can also be purchased "blanketed."

A fourth type of insulation and a more recent comer to the market is a rigid or structural board of mineral makeup which, tho more difficult to apply, has fire-resistant qualities.

Another newcomer is a metal foil made up in ultra-thin sheets of highly reflective metals cemented to layers of kraft paper. This foil works on the principle that shiny surfaces reflect heat just as they reflect light.

Control of Moisture

A really tight home or service building presents, of course, the problem of moisture. The warmer the air the more moisture it will hold, and when warm air passes thru a wall toward

the outdoors from a warm room, if it is sufficiently cold outside, it will be cooled below the water-discharge point and will deposit condensed moisture on the nearest cold surface—usually the inside of the wood sheathing in a frame wall.

Good insulation thinking today advises that some sort of a vapor barrier-paint, building paper, part of the wrapping of blanket insulation—be placed on the inside or *warm* wall of structures.

Insulating the Dairy Barn

Dairy barns present more moisture problems than other farm buildings. Two coats of aluminum paint applied to the interior walls have proved successful in controlling moisture in buildings of this type. Aluminum has the advantage of being attractive in appearance, and it's easy to keep clean.

It is impractical to say what type of insulation should be used in individual dairy barns, but we do know that all air spaces could profitably be kept small. Dead air space is the best insulator of all and since large air spaces are subject to heat-generated air currents which make them no longer dead but alive, this indicates the use of a building material installed in the center of the space between the outer and inner sheathings on the barn wall.

We can make one recommendation for dairy-barn insulating material; flexible and semi-rigid types of insulation are especially well suited for wrapping around the circular ventilating ducts so often found in this type of structure.

The ceiling is the most important surface to insulate in the dairy barn, but this is usually taken care of fairly well by stored hay. If it is not, double insulation should be applied here. Naturally, all doors should be weatherstripped and glass areas should be double-glazed or protected with storm windows, because we cannot expect an air-current ventilation system to work if it is thrown out of balance by air leakage.

Insulating the Poultry House

The poultry laying house is another place where insulation can be applied at a distinct profit, the problem being to duplicate in winter so far as is possible the conditions that are known to be favorable to high egg-production. Hens can adjust themselves and their egg-laying organs to gradual changes in temperature, not at all to sudden variations.

The poultryman cannot expect too much from insulation in maintaining the proper temperature during a long cold spell. It can conserve the heat already available or furnished

by a heating unit; but hens, unlike cows, do not produce sufficient heat to warm to a comfortable temperature the large volume of air in the average poultry house.

The importance of proper insulation in poultry brooder houses goes without saying. Temperature here must be controlled to the nth degree and artificial heat employed during cold snaps. Perfect freedom from drafts should be maintained at all times.

Insulating the Hog House

The hog-raiser may also beat the seasons and make his building investment pay high dividends if he insulates. Not only adequate insulation for both the central and portable types of hog houses should be provided but, in addition, plenty of sunlight-catching glass. Sunlight promotes sanitation, warmth, and dryness; and a new method of approved ventilation will supply fresh air without causing drafts.

Insulated individual, portable houses of the box or A type meet the requirements of early farrowing and may usually be warmed to the right temperature in even the coldest weather by the heat generated by the animal alone.

Insulating the Milkhouse

Milkhouses, too, are prime candidates for insulation appli-

cation. Here the problem is usually keeping out heat rather than letting it in, altho in extreme temperatures heat will be necessary to maintain the 50-degree average considered best for dairy products. An additional problem in insulation in the milkhouse is presented by the cooling tank. For most efficient cooling the concrete, steel, or wood tank should be insulated and rigid insulation of either structural or non-structural (cork) type is well suited to the purpose. It's a good idea to look over the factory-insulated tank on the market today, if you're buying a new one. They are highly efficient in keeping out both cold and heat and maintaining the temperature of the water within them.

Savings With Insulation

The most important consideration is to prevent the material from becoming water-soaked and, if standard building insulation is used, it should be coated thoroly on all sides and edges with hot asphalt before being installed. It can be placed between two layers of concrete in the makeup of a concrete tank and will serve admirably as additional insulation.

Remember: It's very difficult to go wrong on well-installed insulation. Farm-record books show that the savings in fuel and animal body energy and spoiled materials will usually pay out for a pretty sturdy insulation job in from three to eight years.

Paint—Types and Uses

HOUSE paints are in two general classes—hard and soft. Hard paints require more frequent renewal, but less renewal coating, while soft paints chalk (oxidize) more evenly and are less likely to crack and peel over a long period of time.

Conventional white-lead-and-linseed-oil is a good example of a soft paint; it wears thin gradually and may look reasonably well even after long neglect. Hard paints, containing lead and zinc, or lead, titanium, and zinc, or some hardening substitute for linseed oil have certain advantages under some circumstances: they take tints to better advantage, have greater hiding power, and give a harder finish.

Many Uses for Paints

Other types of paint find many uses in special cases. Aluminum paint, made with aluminum powder and a special liquid, has been found very useful for priming coats; and this paint is also good for surfaces such as roofs in hot climates, where it is desirable to reflect rather than absorb the sun's rays. So-called exterior enamels are used on blinds, casings, doors, sashes, and so on, as are the deck paints on porches and floors or wherever resistance to friction and weather is important.

Plaster and wallboard call for wall paints, running from glossy to flat. Casein paints and calcimine can be used if cheaper paints are desired. For shingles, use a good stain or paint (dipped, sprayed, hand applied).

Paint as a Preservative

All metal work except lead, copper, or heavily galvanized iron should be painted to prevent rusting. Most metals unfortunately will not take paint well, and it is necessary to treat the surface with steel wool, wire-brushing, sandpaper, sandblasting, or, best of all, four to six months' weathering. Red lead, blue lead, or metallic zinc are probably the best metal paints.

How Much Paint?

To measure the area of a building to be painted, measure the distance around the structure, then multiply this by the height at the eaves. Gable area is computed by multiplying the height of the gable above the eaves by half its width. Priming coats will generally cover about 650 square feet per gallon, while second and third coats will cover 700 to 750 square feet.

The color of paint is perhaps more important than it may appear. Light colors reflect light, make buildings cooler in summer or winter. Black and red paints, in particular, absorb heat

and have the opposite effect. Light colors of course make a structure appear larger.

In order to insure a good, long-lasting coat of paint, which will offer adequate protection to the surface on which it is applied, the paint itself must be carefully chosen and used. Below are outlined some points to keep in mind about paint and painting.

How to Get a Good Paint Job

Choose the right day. Temperature should be over 40 degrees, humidity not excessive.

Prepare surfaces before painting. Remove old paint if rough and checked; paste paint removers are best for this purpose. Fill cracks and nail holes with putty after first coat has been applied.

Buy plenty of paint. It is better to have too much than too little, for it is hard to match tints in the middle of a paint job. Leftover paint can be used for odd jobs.

Use 3 coats on new wood, 2 on previously painted surfaces where the old finish is in reasonably good condition. A thin, penetrating coat is used as a primer, a semi-glossy body coat comes next, and then an elastic, glossy finishing coat.

Brush vigorously—especially on the primer coat.

Painting Supplies Important

Keep brushes in linseed oil, kerosene, or turpentine during the paint job. It is best to suspend them; do not let them stand on the ends of the bristles. After a paint job is finished, the brush should be washed out in painter's naphtha, mineral spirits, kerosene, or turpentine until all paint pigment is out of the bristles near the handle. Then wash out in soap and water and allow to dry. If paint once gets hard in a brush, it is almost impossible to renew its original paint-holding and even-spreading qualities.

Walls of dairy barns often need painting on the inside so that excessive moisture in the interior in cold weather will not force its way thru the wall, causing peeling of exterior paint. A vapor-seal paper or aluminum paint proves effective in avoiding moisture injury when ventilation is defective or insulation inadequate.

Quality Paints

Investigate the formula of the paint you buy if there is any question as to its quality. Good exterior paints should *not* con-

tain appreciable amounts of the following:

Calcium carbonate (also called white, chalk, or pulverized limestone); Silica (called silicious matter, quartz, or sand); Magnesium and aluminum silicates (called asbestine, talc, or soapstone); Calcium sulfate; Barium sulfate (small amounts of this are permissible in colored paints as a carrier of coloring matter); water (often disguised as "emulsified solution," "colloidal solution," "solution," or "aqueous body agent"); inferior oils (called fish oil, oriental oil, "paint oil," "boiled oil").

Altho small quantities of these oils may do no harm, linseed oil is still the most generally satisfactory for exterior paints.

Thus the addition of large amounts of some other liquid is in effect adulteration. The use of turpentine is recommended if a thinner is needed.

There are certain repainting combinations which have caused unusually unsatisfactory results: white paints over yellow ochre primer; white paints over any colored paint; house paints over enamel or varnish; and pure white lead paint over one of mixed pigments that has not been sufficiently aged. Mixed pigments can, however, be put on over white paint.

In any case, you're going to like the looks of the place when you get it shined up with glistening, beautifying paint.

Exterior Walls for Farm Buildings

THE choice of a material for exterior walls of a building depends upon the use to which a building is to be put, the degree of permanence desired, and the cost and labor which can be devoted to it. Below, the advantages and disadvantages of several materials are outlined:

Milled wood is undoubtedly the easiest to obtain of all building materials, and its cost is comparatively low. It is easily worked, is a good insulator, has an inherent good appearance, and is one of the strongest of all materials for its weight.

Against it may be counted its inflammability and its liability to fungus and termite attack; the fact that its strength (in conventional sizes) is insufficient for long spans or extremely heavy loads. The first two disadvantages may be corrected by paint and other treatment.

Concrete and Concrete Blocks

Concrete is a good wall material. It is made from Portland cement, water, and an aggregate, either sand or gravel. It is strong, resistant to wear, durable, and waterproof. It is commonly used in two forms: solid concrete and concrete blocks. Its strength in solid forming is greatly increased by the use of steel reinforcements which should be rods rather than wire to prevent stretching and resulting cracking of the concrete.

Among the disadvantages are: great weight (which makes it unsuitable for roofing purposes); lack of elasticity—if overloaded it will crack rather than bend; the difficulty of mixing (for best results, the proportions of cement and water must be exact); the necessity of curing or "setting" the concrete in forms for at least a week.

Brick Siding

Brick is a convenient wall-building material. Because of the unit-construction it makes possible, it can be built into almost any shape; the fact that it is of a standard size enables a designer to plan for its use anywhere. It is strong enough for most structures and in many localities is quite cheap.

On the other hand, satisfactory brick is not available in some parts of the United States because of the type of soil, and

the cost of shipping brick in is likely to be quite high because of its weight. Labor cost, either in time or money, is also relatively great because each brick is applied individually.

Both of these costs can be reduced by the use of hollow building blocks, which are larger than ordinary brick and also have slightly greater insulating value. However, building blocks cost more per unit.

Steel for Service Buildings

One of the best materials for service building walls is steel. It is permanent, impervious to rats and mice, is tight, there is little air leakage, and it will not absorb moisture. It is strong and flexible.

But it is a poor insulator. Altho price of a metal "skin" wall is intermediate between wood and masonry in cost, the additional insulation necessary to make steel comparable with wood or masonry in heat-retention or exclusion makes steel comparatively expensive in first cost. Of course, its long life mitigates this factor.

Composition Sidings

Compositions, such as one made of asbestos and cement, in precast sheet form have many of the advantages of steel and have insulating qualities. They are comparatively expensive in first cost, low in upkeep.

Ordinary field stone makes excellent walls in localities where it is available. Its cost is low and it requires little or no maintenance. It is a good insulator and its strength is adequate for small or medium-sized structures. Since its principle advantage is low cost, it is really only suitable in regions where there is a good deal of easily available stone. Reinforcing rods are recommended.

Most manufacturers of commercial building materials have competent technical staffs which can aid you in the choice of a building material and in its use. Consult their bulletins, make up a list of materials you might use, then go to your local dealers. Costs vary widely in different localities, making it impractical to recommend a specific type.

Roofing for Permanence and Protection

FOUR things influence the buyer of roofing: the ability to protect, the permanence, the cost, and the beauty of the material.

The first two items, protection and permanence, depend to a great extent upon the foundation on which the roofing is to be laid.

The roof must be carried on rigid walls securely tied to sills, and extending to the plate with adequate bracing. It is important that the rafters be of the proper size to carry the roof; that they be notched over the plate, and securely nailed. Long

spans must be supported by collar beams extending between two opposite rafters to prevent sagging.

Strip or open sheathing is ordinarily used as a deck where wooden shingles are laid. These strips are from 1" x 4" to 1" x 6", spaced with centers equal to the weather exposure at which the shingles are to be laid. The roof of a building is a source of great heat loss, and, for this reason, there is a growing practice in favor of tight or solid sheathing for wooden shingles as well as for steel roofing.

Composition roofing and slate-surfaced shingles *require* a tightly sheathed roof deck. There are now on the market many good insulating boards employed for sheathing. To assure an adequate nail hold when applying the roofing material, the insulation is applied directly on top of the rafter; over this, and nailed thru to the rafter are placed furring strips or solid decking, according to the needs of the type of roofing used. Now what and how shall you lay on that deck to get your greatest money's worth?

Types of Roofing

These are the varieties usually found on the farm: (1) wood, (2) composition, (3) asphalt, (4) asbestos, (5) steel. First, because it's the oldest in the building service, let's talk about the wood shingle. Light in weight, it has excellent insulating value, and can be colored as desired. Properly treated to prevent warping and fire hazard, it will give good service for years. Be sure the grain is vertical and straight to insure good drainage. A shingle long enough to allow for three laps is better than one allowing for only two, and the price difference may be only \$15 to \$25 for an entire house.

The composition roofings, stone or slate-surfaced, are easy to apply, since they come in strips, which are from 10" to 12" wide and usually 36" long. These strips are self-aligning and self-spacing, which assures a correctly aligned and symmetrically patterned roof without expert labor. They can be used

on a flat deck as well as a sloping one, and are very easy to apply. All composition materials are best applied on a warm day, and they should be stretched for several hours before use.

Asphalt rates above wood in cost. In the better grades there is little room left for improvement. Rag felt is used for a base. Cheaper grades are made on a paper base and invariably crack and fade.

Definitely fire-resistant are the asbestos and asbestos-cement shingles. Heavier, requiring a more solid underpinning, they rank at the top in trouble-free, long service in roof coatings.

Steel in the form of corrugated or V-crimped sheets, is practical for general farm use. Its principal advantages are long life, fire resistance, and lightning protection.

Need for Painting

Sheet-steel roofing, whether galvanized or not, will eventually require painting. Ungalvanized sheets which are mechanically painted at the mills should be repainted immediately after placing on the roof. Galvanized roofing and siding steel which do not require the usual period of weathering before painting but may be treated immediately are now offered by the manufacturer.

Remember that no matter which of the major classes of roofing materials you choose, the important thing to watch is that they be of good grade, carefully laid. For, above all, you must consider your roofing job as a permanent investment.

Interior Walls for Your Home

EVERY homemaker extends the least welcome to a plasterer than any other repair man. He brings cleaning trouble of sizable proportions and leaves a path of grit, grind, and dust that can almost never be obliterated—from memory at least. But plastered walls are the means of achieving some of the most beautiful decorative schemes. Either in building new or renewing walls one should consider the important base of a good finish—lath.

Lath

Wood lath is commonly used, is low in first cost, but is more likely to buckle. Gypsum lath is a fireproof, porous sheet. Wire lath is a woven wire-mesh grid while metal lath is a metal grid. There is also an insulating lath of porous wood or vegetable-fiber sheets. A new development is the suspension of standard metal or gypsum lath from the supporting members by means of semi-flexible clips. Your dealer will be glad to show you any of these.

Wall Finishes

Wood paneling will add atmosphere to a room. The entire room may be paneled or simply one wall—as the fireplace wall. There are veneer paneling, knotty pine, straight grained white pine, and yellow pine which are used for this surface. The natural grain of these woods makes a beautiful background.

Wallboard is now available for little expense. It may be used over old plaster. It is durable and neither buckles nor warps. When applied in panels on walls and ceilings they present a surface suitable for many decorating possibilities.

These surfaces are easy to use, protect against dampness and heat loss—and some are quite soundproof.

There are many types of plank and tile and wainscot material, available in a variety of designs and sizes, that will make old, worn walls and ceilings new. The surface may be stained, painted, or otherwise decorated if desired. Come in ready-cut tile and plank of various sizes. Another type of plank and tile is available in two colors—natural wood and a rich gray-brown—with two textures, fine screen and burlap. Still another is a wood-grained finish, a careful reproduction of a selected real wood panel.

Tile and plank in tan and old ivory for wall and ceiling and a deep wood-brown for wainscoting are much used to renew old rooms. Made of the same material to harmonize is a wide variety of mouldings, friezes, ornaments, and panel strips.

Wallboards

One manufacturer features a wallboard that is successfully applied to old rooms. The effect is a richly paneled room, with the pattern in relief on both ceiling and walls. There are no visible joints. One coat of good paint is all that is needed for finish, altho some prefer to leave the original finish.

Today building materials must meet more exacting demands than ever before. Building board as an interior finish serves a triple purpose in that it has a certain amount of insulation value, takes the place of other wall finish, and offers an attractive form of permanent decoration. Rooms decorated with it are new and distinctive; they take on new life, new charm, and radiate an atmosphere of comfortable hospitality.

Floors—Types and Uses

SINCE many of the floors in a farm home receive constant, hard use, they should be chosen with an eye to serviceability and, of course, we want them to be attractive as well. The manufacturers of flooring materials have done their part in making it possible for us to have a wide choice in the selection

of durable floors that are beautifully designed.

Both the room and your taste will determine your choice from: wood, linoleum, concrete, rubber and cork, tile, and composition.

Wood is the old stand-by. It may be laid in a variety of pat-

terns since it usually comes in three forms: plank, strip, and block. Each has its variation in widths and styles. Hardwood is always excellent and is desirable where the floor is to be varnished. But in a room where the floor is to be covered with linoleum or carpet, the softwoods are desirable because of their lower cost.

Unless they are varnished or painted, wood floors should be kept waxed. They should always be washed with a neutral soap unless they are badly stained or grease-soaked. Strong tri-sodium detergents may injure them.

Linoleum Floors

Linoleum has come out of the kitchen and bath to take its place as one of the popular, successful floorings for other rooms in the house. It has taken on a distinctive style of its own and is no longer an imitation of the patterned rug that made it difficult to achieve attractive color treatment with its use.

Good linoleum is very durable and moderate in cost. Don't confuse the lower-cost "felt-base" material with real linoleum,

which comes in tile as well as in rolls and is very easy to lay.

It's water- and stain-proof and easy to clean. It comes with a protective coating that is good for several months and which should be maintained with wax for long wear. Avoid the use of strong detergents which tend to dry it, and use the scrub brush and water sparingly.

Concrete and Composition Floors

Concrete is excellent for the workroom and basement where there will be dampness and hard wear. The floors should be sloped to a drain for easy washing down. It can be made very colorful, the color either being put in the concrete or painted or stained on. If paint or stain is desired for the finish, it's a good idea to consult your paint dealer for information in treating the concrete to make the finish "stick."

Also popular for basement and laundry floors are asphalt and composition tiles of various kinds. Rubber and cork and tile floors are used, too, and it is possible to obtain them in many colorful designs.

Stormproofing the House and Service Buildings

FIRST step in stormproofing is to check house and service buildings to determine if there are excessive air leakages around door and window frames. Often the heat losses here exceed losses around the window sash itself. By removing inside or outside trim, the space between the window frame and the house or barn frame may be packed with insulation. Where there are sash weights, narrow strips of one-half-inch insulation board may be carefully fitted and the trim reset in caulking compound.

Storm Windows and Doors

The second step in the weatherproofing program is to provide a complete set of carefully fitted storm windows and storm doors. Where double-glazing (two panes of glass separated by an air cell) is used in window frames, storm windows are not necessary, but weatherstrip is. Heat passes thru glass very rapidly, and storm windows may reduce the total window heat loss as much as 50 percent under average conditions. From the accompanying table you will notice that storm windows save from 25 to 30 percent *on the fuel bill*. Fuel savings will actually pay for the windows in from one to three years. Remember it pays to install storm windows on *all* sides of the house. When on the average house as much heat is lost thru the window and door openings as is lost thru all of the rest of the outside walls, we may say that storm windows and doors are a major item. Weather-stripping is most effective in high winds, and even average conditions it will result in a fuel saving of from 15 to 20 percent.)

The third step in the weatherproofing program calls for insulation, discussed in a previous section of this Manual.

The following table has been taken from "Thermal Insulation of Buildings," Circular of the United States Bureau of Standards No. 376:

Approximate Fuel Savings

(Expressed in percentage of fuel which would have been required for similar house without insulation or weather-stripping.)

	<i>Saving, Percent</i>
No insulation, weather-stripped	15-20
Same, with storm windows	25-30
½-inch insulation, not weather-stripped	20-30
½-inch insulation, weather-stripped	40
½-inch insulation, with storm windows	50
1-inch insulation, not weather-stripped	30-40
1-inch insulation, weather-stripped	50
1-inch insulation, with storm windows	60

In the same way that fuel savings will repay the cost of storm windows and doors, it may be shown that insulation

costs may be repaid. Simply make an estimate of the cost of stormproofing your home by calking, adding storm windows and doors, insulating the ceiling (most important) or walls and ceiling. Now from the table you may determine the percent of fuel-savings which, if multiplied by your last year's fuel bill, should give a fair estimate of the yearly fuel savings after the proposed improvements are made. To determine the number of years for the fuel savings to repay the cost, simply divide the cost of the improvement by the yearly savings. Stormproofing your home really pays because once fuel savings have repaid the cost of the improvement, further savings for the years ahead are straight profit. Greater house comfort, then, is really an extra dividend to a business operation.

Some people think they are not particularly anxious to reduce their fuel bills because their fuel is homegrown. They should charge themselves a cordwood price, tho, and remember the days of labor spent in cutting, stacking, and carrying. Even so, to them stormproofing will mean more rooms heated to comfortable temperatures, and all of part of the rooms maintained at a desirable temperature day and night. If stormproofing is provided before a furnace is purchased, savings in the heating system costs because of reduced capacity will largely offset the cost of materials for proofing.

Service Buildings

Buildings housing livestock and poultry are no exception to the rule regarding heat losses. For instance, any service building which is well lighted has large heat losses thru doors and windows; from 25 to 30 percent of these heat losses may be saved by using storm windows and storm doors. By reducing this heat loss, extra heat becomes available for ventilation. While some of the heat loss thru windows is by air leakage, a greater part of it is by heat transfer directly thru the glass. If a good ventilation system is available, the air leakage thru the doors and windows can be replaced by the ventilating system, and the heat saved because of reduced losses thru the glass may be used to heat more cold air for ventilation.

Wall insulation is most effective for animal and poultry housing. In fact, a thoroly insulated poultry house may be maintained dry thru good ventilation and warm enough for profitable egg-production with only open windows and a straw loft for ventilation. Unfortunately, many shelters are so constructed that insulation is difficult or expensive. Storm windows and storm doors will provide a valuable and effective means of reducing heat losses at low cost.

Under many conditions complete stormproofing of animal shelters will pay its way in better production, improved health conditions, improved sanitation, longer life of building, and more uniform temperature; and the benefits may pay dividends just as has been shown in house insulation.

In older farm buildings you're probably harboring at least one of

Fire's Big Hazards!

CHIMNEY



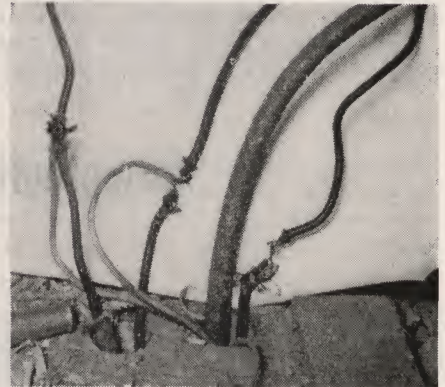
Fire Hazard 1. Chimney sagged against the roof, wedged, and was split when the house settled

HEATING SYSTEM

Fire Hazard 2. Here an uninsulated pipe cap (left hand) was used; a bad wall fire resulted



WIRING



Fire Hazard 3. Unsoldered splices on wire, no insulation, no tubes thru floor—a dangerous, makeshift attempt at wiring

YOU may not like this headline, but if you'll be fair and—just to prove it wrong—take a 10-minute tour of your farm, perhaps you'll find it fits. If it doesn't you're one of the 19 out of every 100 farmers who have a reasonably fire-safe set of buildings.

Records made last year from the inspection of some 12,000 Midwest farms for fire hazards showed the situation I've outlined in the headlines, and fixed the blame squarely upon these four dangers: chimneys that look good but have somewhere faulted and sagged; rusted, sagging heating equipment not well insulated; electric wiring put up in a hurry; and shingles or roofing that still keep off the elements but are tinder for a spark. There are other risks, of course, but let's concentrate on the worst.

HOW long since you've been over in that corner of the attic thru which the chimney runs? If you're one of the 81—and in darned good company—it's been a couple of years. A lot of things have happened! Maybe some old boxes have been shoved over against the bricks and a crack has appeared in the mortar. A swell spot for trouble! Maybe the house has settled a bit and the chimney has been pulled apart because it leaned over and wedged on the framing instead of running level thru metal flashings and firestops. And maybe the mortar on the job wasn't so good in the first place.

Suppose you want to fix it—or that you're doing some building and remodeling and want to put a chimney in right. Use hard-burned brick, stone, or hollow-clay units, and put in flue linings unless your inner brick is firebrick. Smack the whole chimney down on a solid foundation. Put the outlet at least 2

and preferably 3' above the highest rooftop. Build the woodwork up to 2" from the chimney, and fill with a metal flashing floor and screened ashes or something similar. Hook up only one heating unit to one flue. Above all, top the outlet with a spark-arrester—they cost in the neighborhood of a dollar and they work on old as well as new jobs by keeping sparks off the roof, the strawstack, the barn, and the pool of oil-soaked waste where you've been draining the tractor.

Heating equipment is the second major fire hazard on the farmstead. Because you have to fire that old furnace or stove every cold day, you pay some attention to it; but probably little attention to the pipe or pipes that carry the smoke and sparks thru the house or sheds. Here's trouble. What if water condensed and rusted one of those pipes thru so sparks or burning soot could drop out? Suppose you have stopped up an old pipe opening with a metal cap, papered over it a couple of times—but still have a heating unit in another room that uses the pipe. That paper may heat!

When you come around to moving your present stove or putting up a new one, try to have stovepipes enter the chimney directly without passing thru walls and floors. If they must, fit them with a ventilating collar; put an asbestos strip along them where they come in close to walls and ceilings. Fire shields under the stoves and in back of them are other "musts."

If you're working with a furnace or thinking of putting one in, give it a clearance of at least 15" overhead, or 2½' if there is wood construction above it. Even this should be protected by sheeting or asbestos board. All the horizontal

**The records show that 81 out of every 100 farmers
in your community are risking lives and lifetimes
by allowing four easily remedied causes of
fire to exist in houses, barns, outbuildings**

ROOF

Fire Hazard 4. Neglected roofs, untreated with fire-resistant compounds, make ideal surfaces for catching and holding the sparks from farmstead chimneys



warm-air pipes should run at least 6" below floor beams or wood-and-plaster ceilings. No warm-air pipes should pass thru partitions less than 5' away from the furnace. Where warm-air pipes do run thru partitions, they should be covered by at least $\frac{1}{2}$ " of asbestos and the covering should be at least an inch away from studding.

Electricity is the third great source of hazards. Seventy-six out of every 100 wired farms have them. Mostly they happen in the fuse boxes; fuses burn out from an overload on the line and in go pennies, nails, wire. The overload keeps on, the wires get hot—and you hope your insurance covers. The following table of wire sizes and the proper fuses to protect them may help:

WIRE SIZE	FUSE RATING
No. 16.....	6 amperes
No. 14.....	15 amperes
No. 12.....	20 amperes
No. 10.....	25 amperes
No. 8.....	35 amperes
No. 6.....	50 amperes

On your lead-in wires from transformer to your circuits, be sure there's an 8" spacing between any 2; and it's not good medicine to carry over 125' unsupported. Keep them 8' above roof lines.

Your lead-ins should be No. 6 or larger; your circuit stuff should be No. 8, and your branch circuits should carry at least No. 14 wire. The wiring should be grounded at the transformer

and at each individual master service on the supply side of the service switch. Runs of conduit or metal cable should likewise be grounded. All wires passing thru walls and floors should be carried in tube insulators. There should not be more than $4\frac{1}{2}$ ' between wire supports. And every splice should be soldered and thoroly taped. The picture on page 76 shows the kind of splicing usually done by farmers in a hurry.

Now records show that half of the 80-percent fire-inviting farms have very bad roofs; about three quarters of them have roofs not so good. That's the roof you walk by every day; and it's the fourth big hazard.

IF YOU have a wood-shingle roof, you can probably snug in the worst sections with new, edge-grain shingles and have an all-over job that will last for years. If shingles need renailling, better wait until they're wet and more pliant. But don't allow patches of curled, split, grayed-out, and tinder-dry shingles to stay up, and do have gutters and hips run with metal so that sparks can't lodge in them. Metal, slate, and asbestos roof-coverings, while not so resistant to wind and hail as wood, are safe from sparks and won't spark themselves if they do burn. But watch them for places where the wind may have lifted them along the edge of the roof or along the gutters and hip joints. All they'll need is a nailing down. If your farm buildings are closely grouped, be doubly sure the roof of one isn't flirting with the chimney of another.

If fire does start in any building, it will be considerably hampered in one where there are no natural flues. That is, a door at the head of the stairs in a barn may be the means of saving the whole building, since fire needs air and draft to get galloping. That brings up the matter of so-called fire baffles in the more common farm-home structures. Braces between studding in a wall cut the upward draft area by half—as well as strengthen the wall. Headers at the ends of joists prevent upward drafts from foundation areas. Firestops may be fashioned cheaply of forms of asbestos or brick where joists run thru partitions. Various insulation boards are fire-retardant and can give a maximum of protection to fires starting within farm-building interiors—but it should never be forgotten that drafts thru wall sections and up stair walls are the most dangerous actors.

Service buildings present fewer problems than homes, but sheds and small barns where oil is stored or gas-burning machinery is housed should pretty generally be of really fireproof material—brick, tile, metals—and have whatever woodwork is present protected by fire-resistant building boards.

THE barn is particularly subject to fire, and this problem has been well met by many of the steel-structures people. Another approach would be to make barn walls of concrete, stone, or hollow tile and to put in a reinforced loft floor. This would largely prevent the start of fires; and should the loft above burn, the lower masonry would so retard the fire that stock could be removed. Even with wood foundations it might be practicable to run a light concrete baffle over the mow floor to reduce the danger to animals and machines stored below.

Both barns and homes should have lightning rods, of course—that goes without saying. Bins of soda and sawdust, a water source, ladders, sand, chemical tanks should be handy—they go without saying, too. A new development, township and county fire departments, deserves a good deal of thinking by the farmer who doesn't relish the thought of making a new start. But the most immediate job is checking the Big Four.

Build and win a Cash Prize!

68 BIG PRIZES

for New and Remodeled Farm Home Buildings

FARMERS are building! They're remodeling! Wherever you go, you see improvements on the farmstead in action—here new insulation for the poultry house—there a ventilating system for the barn—here a new workroom in the farm home—there a concrete floor for the feeding yard—improvements and new buildings and farm homes everywhere!

Improving one's farm or home is always gratifying, and if you are among the thousands of progressive farmers who plan to do so now, you are to be congratulated! Your greatest reward will be the added comfort, convenience, and attractiveness of your farm. And now you have an added incentive: Successful Farming's 1940-41 Building Contest.

GENEROUS CASH AWARDS

Imagine being actually *paid* for building a new farm home or service building or improving those you now have! That's exactly the opportunity this contest offers you. 68 cash prizes totaling \$2,000 will be awarded by *Successful Farming* for—

- The best new farm homes
- The best remodeled farm homes
- The best new service buildings
- The best remodeled service buildings

No matter how small or how large your improvements may be—whether you spend a few dollars, a few hundred, or several thousand—your opportunity to win a cash award is the same. Each entry will be judged, not on the magnitude of the building or rebuilding, but on how well it has been done—how much has been added to the comfort, convenience, attractiveness of the farm or farm home, inside or out.

ENTER CONTEST NOW

The contest opens September 1, 1940, and will close December 31, 1941. Families who have a deep appreciation of the real job and lasting satisfaction of a better farm or home, and families possessing the imagination, the determination, and the sincere desire to make their farmstead more convenient and attractive, are going to share these generous cash awards. Will your family be one of them?

YOUR SUCCESSFUL FARMING BUILDING CONTEST GENERAL RULES

- 1** This contest is divided into four sections: I, New Homes; II, Remodeled Homes; III, New Service Buildings; and IV, Remodeled Service Buildings.
- 2** Anyone may enter this contest except employees of the Meredith Publishing Company and their families.
- 3** You may enter as many separate building projects as you wish, or different members of your family may enter different building projects.

- 4** The size or cost of your project or projects does not matter because judging will be based on:

- (a) Suitability to the needs of your family.
- (b) Adaptability to your farmstead and to your farm business.
- (c) Appearance.

- 5** The decision of the judges will be final; in event of ties, duplicate prizes will be awarded. All material submitted in the contest becomes the property of *Successful Farming*, and no entries will be returned.

- 6** Your building project must have been completed between September 1, 1940 and December 31, 1941. Projects begun before the first of September but completed after that date are, of course, eligible. The envelope containing your contest entry must be postmarked before midnight of December 31, 1941. Be sure to write your name and address on every piece of contest material you send. Address your entries to Kirk Fox, Editor, *Successful Farming*, Des Moines, Iowa.

- 7** The form for the Final Contest Report will be mailed to you several months before the closing date of the contest, December 31, 1941. Should your project be completed before that time, a final report form will be mailed to you upon request.

SECTION I—NEW HOMES

- 1** You may enter your new home in one of two groups: Group 1 for new homes costing up to \$4,000; or Group 2 for new homes costing \$4,000 or more.
- 2** Your contest material should consist of a Final Contest Report completely filled out, plus the following:
 - (a) A rough sketch of all floor plans showing dimensions of rooms, locations of windows and doors, electrical outlets, and so on. Blueprints are desirable but are not necessary for eligibility.
 - (b) A snapshot of your new home. Interior photographs will be helpful to the judges, but are not necessary.
 - (c) A rough sketch of your farmstead layout showing the location of the house in relation to the other farm buildings.
 - (d) A list of materials and costs including outside labor, and the estimated number of hours of labor contributed by you and your family.
 - (e) A letter describing your experiences in building your home and how you like it.

SECTION II—HOME REMODELING

- 1 You may enter your home remodelings in one of these two groups: Group 1 for home remodeling costing up to \$250; Group 2 for home remodeling costing \$250 or more.
- 2 Your contest material should consist of a Final Contest Report completely filled out, plus the following:
 - (a) A rough sketch of all details and rough floor plans of the room or rooms which the remodeling project affects, showing dimensions, location of windows and doors, electrical outlets, and so on. In case your project changes the exterior of your home, "before" and "after" snapshots are desirable, but not necessary. Interior "before" and "after" pictures also desirable, but not necessary.
 - (b) A list of materials and costs, including outside labor, and estimated number of hours of labor contributed by you and your family.
 - (c) A letter describing your remodeling experiences and how you like the completed results.

SECTION III—NEW SERVICE BUILDINGS

- 1 You may enter your new service buildings in these groups: Group 1 for service buildings costing up to \$1,000; Group 2 for service buildings costing \$1,000 or more.
- 2 Your contest material should consist of a Final Contest Report completely filled out, plus the following:
 - (a) A sketch of all floor plans showing dimensions of interior divisions, locations of windows and doors, electrical outlets, and so on. Blueprints are desirable but are not necessary for eligibility.
 - (b) At least two snapshots taken from opposite corners of your new buildings so that all four sides of each building are shown. Interior photographs will be

helpful to the judges, but are not necessary.

- (c) A rough sketch of your farmstead showing location of new service building or buildings in relation to other farm structures.
- (d) A list of materials and costs, including outside labor, and the estimated number of hours of labor contributed by you and your family.
- (e) A letter describing your experiences in the construction of your new service building or buildings and how you expect the project to increase the efficiency of your farm.

SECTION IV—SERVICE BUILDING REMODELING

- 1 You may enter your service building remodeling projects in either of these two groups: Group 1 for projects costing up to \$250; and Group 2 for projects costing \$250 or more.
- 2 Your contest material should consist of a Final Contest Report completely filled out by you, plus the following:
 - (a) A rough sketch of the floor plans which the remodeling project affects—showing dimensions, location of windows, doors, electrical outlets, and so on. In case your project changes the exterior of your service building, "before" and "after" snapshots are desirable, but not necessary. Interior "before" and "after" pictures desirable, but not necessary.
 - (b) A rough sketch of your farmstead showing the location of the remodeled service building or buildings in relation to other farm structures.
 - (c) A list of materials and costs, including outside labor, and the estimated number of hours of labor contributed by you and your family.
 - (d) A letter describing your experiences in remodeling and how you expect the results to contribute to the efficiency of the service building or buildings.

Successful Farming Will Give

\$2000

Cash Prizes

	Group I		Group II	
	Up to \$4,000		\$4,000 and over	
NEW HOMES	1st	\$100	1st	\$100
	2nd	60	2nd	60
	3rd	30	3rd	30
	Next 5	10	Next 5	10
	Up to \$250		\$250 and Over	
REMODELED HOMES	1st	\$100	1st	\$100
	2nd	60	2nd	60
	3rd	30	3rd	30
	4th	20	4th	20
	Next 5	10	Next 5	10
	Up to \$1,000		\$1,000 and Over	
NEW SERVICE BUILDINGS	1st	\$100	1st	\$100
	2nd	60	2nd	60
	3rd	30	3rd	30
	Next 5	10	Next 5	10
	Up to \$250		\$250 and Over	
REMODELED SERVICE BUILDINGS	1st	\$100	1st	\$100
	2nd	60	2nd	60
	3rd	30	3rd	30
	4th	20	4th	20
	Next 5	10	Next 5	10



PRAYER BEFORE BUILDING

Even before we start, Lord, be our guest,
 Our guide, our wisdom in this glorious plan:
 A home, of all things on earth the best
 And happiest place that has been given man.
 Guide in our choice that walls and roof may be
 Worthy, dear Lord, to house and shelter Thee.

We ask Thy wisdom that no faulty thing
 Be used in building this, our heart's desire.
 Strong oak, fine brick, red cedar—we would bring
 To last the years thru. . . Here will be our fire,
 And here our books, and there will stand a bed,
 And in this space our table will be spread.

There will be no room spared for evil here,
 But gentle courtesy will find a place,
 And kindness will abide, and always near,
 Thy gracious presence and Thy shining face.
 This new house is our life's supreme reward,
 We pray Thee put Thy blessing on it, Lord.

By Grace Noll Crowell

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SUCCESSFUL FARMING

The Magazine of Farm Business and Farm Homes

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